# Author Index to Volume 69

References with (A) are to abstracts of papers presented at meetings of the American Physical Society. References with (L) are to Letters to the Editor, and those with (T) designate title only.


**Adams, Norman I., Jr.** (see Page, Leigh)—492, 494

**Aebersold, Paul C. and Gladys A. Anslow.** Fast neutron energy absorption in gases, walls and tissue—1

**Ageno, Mario.** Albedo of thermal neutrons—241(L)

**Aicher, J. O.** (see Kenty, Carl)—36(L)

**Akeley, E. S.** On the design of a cavity of a linear electron accelerator—255(A)

—— Study of stationary electromagnetic modes for region between parallel perfectly conducting planes and application to electron accelerator—50(A)

**Akeley, Edward S.** Theory of the narrow resonant slit in a wave guide partition—697(A)

—— (see Feuer, Paula)—697(A)

**Alpert, D. and S. Krasik.** Integral cavity TR switch *X* 698(A)

**Altar, William.** Circle diagram for resonant microwave systems—697(A)

**Andersen, A. E.** (see Clark, J. W.)—698(A)

**Anderson, Scott.** Mechanism of natural oxidation of aluminum, iron, and copper—52(A)

**Andrews, C. L.** Diffraction pattern of a circular aperture at short distances—684(A)

**Anslow, Gladys A.** (see Aebersold, Paul C.)—1

**Anthony, R. L.** (see Dart, S. L.)—52(A)

—— (see Mrowca, B. A.)—51(A)

**Ashkin, Arthur.** High power rising sun magnetron—701(A)

**Autler, Stanley H., Gordon E. Becker, and J. M. B. Kellogg.** Absorption of microwaves by water vapor—694(A)

**Avramy, Melvin.** Robot dynamics—theory of non-linear automatic control systems—697(A)

**Bachelet, M.** (see Tsien, San-Tsiang)—39(L)

**Bacher, R. F., C. P. Baker, and B. D. McDaniel.** Experiments with a slow neutron velocity spectrometer II—443

**Bacher, Robert F.** Nuclear physics in the atomic bomb development—674(T)

**Baker, C. P.** (see Bacher, R. F.)—443

**Ball, Jack and F. C. Blake.** Application of the curved crystal spectrograph to the chemical analysis of alloys—703(A)

—— **and F. C. Blake.** Curved crystal spectrograph applied to determine the complete spectrum of all orders obtained, and the evaluation of same with varying technique—703(A)

**Band, William.** Diamagnetism and superconductivity—241(L)

—— Occurrence of superconductivity in a collective electron assembly—41(L)

—— Superconductivity and magnetic energy between currents—241(L)

**Barnett, S. J.** Rotating ring sine-wave generator especially suitable for measurement of magnetic intensities and their variations—133(A)

—— Rotating magnetic-rod generator suitable for the measurement of small magnetic intensities and their variation, and their variations, and for other purposes—135(A)

**Barton, Vola P. and George A. Lindsay.** X-ray *K* absorption edge of silicon—48(A)

**Beams, J. W.** Balancing sedimentation by electrophoresis in high centrifugal fields—546(A)

—— **and J. L. Young, III.** Production of high centrifugal fields—537(L)

**Beck, Guido.** Remarks on the fine structure of "positronium"—532(L)

**Becker, Gordon E.** (see Autler, Stanley H.)—694(A)

**Becker, R. and G. Leibfried.** On the method of second quantization—34(L)

**Bennett, W. E., C. E. Mandeville, and H. T. Richards.** Yield function and angular distribution of the D+D neutrons—418

**Benzer, S.** High voltage and photo-sensitive characteristics in germanium—683(A)

**Berger, F. B.** (see Manley, J. H.)—254(A)

**Bergmann, Peter G.** Propagation of radiation in a medium with random inhomogeneities—255(A)

**Beringer, Robert.** Absorption in oxygen at one-half cm—693(A)

—— (see Kyhl, R. L.)—694(A)

**Berlin, T. H.** Stationary solution of the Fokker-Planck equation for a reflecting boundary—688(A)

—— (see Dennison, D. M.)—542(L)

**Berry, Clifford E.** Computor for solving linear simultaneous equations—135(A)

**Bethe, H. A.** Influence of multiple scattering on curvature measurements—689(A)

**Birks, L. S. and H. Friedman.** Thickness measurements of this coatings by x-ray absorption—49(A)

**Blake, F. C.** On the proper indexing of the crystal faces of $\alpha$-quartz by the power method and the calculation of their structure factors for both right-handed and left-handed $\alpha$-quartz—49(A)

—— On the proper indexing of the faces obtained in the powder method of x-ray analysis for $\alpha$-quartz—703(A)

—— (see Ball, Jack)—703(A)

—— (see Farnham, John W.)—48(A)

**Blatt, John M.** On the heavy-electron pair theory in the limit of strong coupling—285

**Bleakney, Walker.** Shock waves in a tube—678(A)

**Bless, A. A.** (see Fuller, Wallace F.)—545(A)

**Blewett, John P.** Radiation losses in the induction electron accelerator—87

**Bloch, F., W. W. Hansen, and Martin Packard.** Nuclear induction—127(L), 680(A)

**Bloch, Felix** (see Packard, Martin)—680(A)

**Bloch, Ingram.** Production of mesotrons in the stratosphere—575

# Author Index to Volume 69

References with (A) are to abstracts of papers presented at meetings of the American Physical Society. References with (L) are to Letters to the Editor, and those with (T) designate title only.


**Adams, Norman I., Jr.** (see Page, Leigh)—492, 494

**Aebersold, Paul C. and Gladys A. Anslow.** Fast neutron energy absorption in gases, walls and tissue—1

**Ageno, Mario.** Albedo of thermal neutrons—241(L)

**Aicher, J. O.** (see Kenty, Carl)—36(L)

**Akeley, E. S.** On the design of a cavity of a linear electron accelerator—255(A)

—— Study of stationary electromagnetic modes for region between parallel perfectly conducting planes and application to electron accelerator—50(A)

**Akeley, Edward S.** Theory of the narrow resonant slit in a wave guide partition—697(A)

—— (see Feuer, Paula)—697(A)

**Alpert, D. and S. Krasik.** Integral cavity TR switch *X* 698(A)

**Altar, William.** Circle diagram for resonant microwave systems—697(A)

**Andersen, A. E.** (see Clark, J. W.)—698(A)

**Anderson, Scott.** Mechanism of natural oxidation of aluminum, iron, and copper—52(A)

**Andrews, C. L.** Diffraction pattern of a circular aperture at short distances—684(A)

**Anslow, Gladys A.** (see Aebersold, Paul C.)—1

**Anthony, R. L.** (see Dart, S. L.)—52(A)

—— (see Mrowca, B. A.)—51(A)

**Ashkin, Arthur.** High power rising sun magnetron—701(A)

**Autler, Stanley H., Gordon E. Becker, and J. M. B. Kellogg.** Absorption of microwaves by water vapor—694(A)

**Avramy, Melvin.** Robot dynamics—theory of non-linear automatic control systems—697(A)

**Bachelet, M.** (see Tsien, San-Tsiang)—39(L)

**Bacher, R. F., C. P. Baker, and B. D. McDaniel.** Experiments with a slow neutron velocity spectrometer II—443

**Bacher, Robert F.** Nuclear physics in the atomic bomb development—674(T)

**Baker, C. P.** (see Bacher, R. F.)—443

**Ball, Jack and F. C. Blake.** Application of the curved crystal spectrograph to the chemical analysis of alloys—703(A)

—— **and F. C. Blake.** Curved crystal spectrograph applied to determine the complete spectrum of all orders obtained, and the evaluation of same with varying technique—703(A)

**Band, William.** Diamagnetism and superconductivity—241(L)

—— Occurrence of superconductivity in a collective electron assembly—41(L)

—— Superconductivity and magnetic energy between currents—241(L)

**Barnett, S. J.** Rotating ring sine-wave generator especially suitable for measurement of magnetic intensities and their variations—133(A)

—— Rotating magnetic-rod generator suitable for the measurement of small magnetic intensities and their variation, and their variations, and for other purposes—135(A)

**Barton, Vola P. and George A. Lindsay.** X-ray *K* absorption edge of silicon—48(A)

**Beams, J. W.** Balancing sedimentation by electrophoresis in high centrifugal fields—546(A)

—— **and J. L. Young, III.** Production of high centrifugal fields—537(L)

**Beck, Guido.** Remarks on the fine structure of "positronium"—532(L)

**Becker, Gordon E.** (see Autler, Stanley H.)—694(A)

**Becker, R. and G. Leibfried.** On the method of second quantization—34(L)

**Bennett, W. E., C. E. Mandeville, and H. T. Richards.** Yield function and angular distribution of the D+D neutrons—418

**Benzer, S.** High voltage and photo-sensitive characteristics in germanium—683(A)

**Berger, F. B.** (see Manley, J. H.)—254(A)

**Bergmann, Peter G.** Propagation of radiation in a medium with random inhomogeneities—255(A)

**Beringer, Robert.** Absorption in oxygen at one-half cm—693(A)

—— (see Kyhl, R. L.)—694(A)

**Berlin, T. H.** Stationary solution of the Fokker-Planck equation for a reflecting boundary—688(A)

—— (see Dennison, D. M.)—542(L)

**Berry, Clifford E.** Computor for solving linear simultaneous equations—135(A)

**Bethe, H. A.** Influence of multiple scattering on curvature measurements—689(A)

**Birks, L. S. and H. Friedman.** Thickness measurements of this coatings by x-ray absorption—49(A)

**Blake, F. C.** On the proper indexing of the crystal faces of $\alpha$-quartz by the power method and the calculation of their structure factors for both right-handed and left-handed $\alpha$-quartz—49(A)

—— On the proper indexing of the faces obtained in the powder method of x-ray analysis for $\alpha$-quartz—703(A)

—— (see Ball, Jack)—703(A)

—— (see Farnham, John W.)—48(A)

**Blatt, John M.** On the heavy-electron pair theory in the limit of strong coupling—285

**Bleakney, Walker.** Shock waves in a tube—678(A)

**Bless, A. A.** (see Fuller, Wallace F.)—545(A)

**Blewett, John P.** Radiation losses in the induction electron accelerator—87

**Bloch, F., W. W. Hansen, and Martin Packard.** Nuclear induction—127(L), 680(A)

**Bloch, Felix** (see Packard, Martin)—680(A)

**Bloch, Ingram.** Production of mesotrons in the stratosphere—575

**Boggs, F. W.** Principles of operation of the resnatron—700(A)
**Bohm, David** (see Lewis, Harold)—129(L)
**Boissières, G.** (see Tsien, San-Tsiang)—39(L)
**Bostick, W. H.** Pulse transformer ratings based on energy considerations, and methods of design based on thermodynamical considerations—697(A)
**Brattain, Walter H.** Rectification series—682(A)
**Braun, Milton L.** Plasticity *versus* elasticity in stretched rubber as indicated by creep interference with the Joule effect—545(A)
**Breit, G.** Schematic treatment of nuclear resonances—472
**Brillouin, L.** Influence of space-charge on the bunching of electron beams—700(A)
**Brinckerhoff, R. F.** (see Marinelli, L. D.)—690(A)
**Brody, S. B.** (see D'Eustachio, D.)—256(A)
**Brown, F. C.** Velocity of propagation of the transmitted photo-effect in silicon crystals—686(A)
**Brown, Sanborn C.** Characteristics of the pre-corona discharge and its use as a reference potential in voltage stabilizers—696(A)
—— (see Herlin, Melvin A.)—696(A)
**Broxon, James W.** Recurrences of small bursts of cosmic-rays—46(A)
**Buechner, W. W.** (see Van de Graff, R. J.)—47(A), 452
—— **R. J. Van de Graaff, A. Sperduto, E. A. Burrill, L. R. McIntosh, and R. C. Urquhart.** Compact high voltage electrostatic generator using sulphur hexafluoride insulation—692(A)
**Burbank, C. J.** Acoustic reflection from triplanes, spheres, and disks—136(A)
**Burrill, E. A.** (see Buechner, W. W.)—692(A)

**Caldirola, B.** Relativistic correction in calculating the magnetic moment of the deuteron—608
**Caldwell, Wallace C.** Band-pass TR switch. Part II: Linear electrical characteristics—699(A)
**Camp, Glen D.** Impedance representation of tangential boundary conditions—501
—— Impedance representation of tangential boundary surface forces—135(A)
—— Variational method for linear dissipative anisotropic elastic systems—134(A), 502
**Chance, Britton.** Precision methods for pulse time measurement—676(T)
**Chang, W. Y.** Study of the alpha-particles from Po with a cyclotron-magnet alpha-ray spectrograph—60
—— Low energy alpha-ray spectra and mechanism of alpha-decay—254(A)
**Chesley, F. G.** (see Hippel, A. von)—685(A)
**Christian, Schuyler.** Integration of $\sin xdx/x$—546(A)
**Ch'u, Sheng-Lin** (see Oster, Francis)—531(L)
**Clark, J. W.** (see Crandell, C. F.)—698(A)
—— **A. E. Andersen, and A. L. Samuel.** Design of copper disk seal TR tubes—698(A)
**Clarke, E. T. and John W. Irvine, Jr.** Nuclear excitation functions: 14-Mev deuteron reactions on Cu, Mg, and Al—680(A)
**Coggeshall, Norman D. and Eleanor L. Saier.** Infra-red absorption of methane as influenced by foreign gases—257(A)
**Coheur, Francine P. and Pierre M. Coheur.** On the intensity distribution among the rotational lines of AlO—240(L)
**Coheur, Pierre M.** (see Coheur, Francine P.)—240(L)
**Coltman, J. W.** (see Ebbighausen, E. G.)—48(A)
—— **and M. Goldhaber.** Capture cross sections for slow neutrons—411
**Compton, K. T.** Scientific mission to Japan—676(T)
**Conant, J. B.** Interaction of science and society—676(T)
**Condon, E. U.** (see Hipple, J. A.)—257(A), 347
—— **and L. F. Curtiss.** New units for the measurement of radioactivity—672(L)
**Conwell, E. and V. F. Weisskoff.** Theory of impurity scattering in semiconductors—258(A)
**Cooper, D.** Absorptive effects relating to fine structure in the angular distribution of cosmic-ray intensity—546(A)
**Cooper, John N.** X-ray energy level widths of tungsten—48(A)
**Corben, H. C.** Classical theory of electromagnetism and gravitation. I. Special theory—225
**Courant, E. D.** Image force and tunnel effect in crystal rectifiers—684(A)
**Crandell, C. F., A. L. Samuel, and J. W. Clark.** Recovery time measurements of TR tubes—698(A)
**Crane, H. R.** Racetrack: a proposed modification of the synchrotron—542(L)
—— (see Levinstein, H.)—679(A)
**Crawley, Clyde B.** (see Pardue, L. A.)—545(A)
**Crittenden, Eugene C., Jr., Charles S. Smith, and Leonard O. Olsen.** Instrument for measurement of the magnetic properties of samples of small cross-sectional area—703(A)
**Curtiss, L. F.** (see Condon, E. U.)—672(L)

**Dart, S. L., R. L. Anthony, and P. E. Wack.** Fast stress-strain machine—52(A)
**Daunt, J. D. and K. Mendelssohn.** Transfer phenomena and indeterminacy—126(L)
**Davidson, W. D.** Studies on x-rays scattered at small angles as applied to carbon black used in the rubber industry—703(T)
**Dearnley, I. H.** (see Montgomery, C. G.)—699(A)
**deBethune, A. J. and R. D. Present.** On the flow of binary gas mixtures through a long capillary when the mean free path is comparable to the capillary diameter—259(A)
**De Bretteville, A., Jr.** Oscillographic study of the dielectric properties of barium titanate—687(A)
**Dejardin, Georges and Jean Dufay.** Light of the night sky in the ultraviolet range—685(A)
**Denmark, H. S.** (see Hippel, A. von)—685(A)
**Dennison, D. M.** (see Hadley, L. N.)—258(A)
—— **and T. H. Berlin.** Stability of orbits in the racetrack—542(L)
**DerMateosian, E. and H. Friedman.** Organic vapors for self-quenched G-M counters—689(A)

**D'Eustachio, D.** Rapidly acting vacuum valve—251(A)
—— Recrystallization of quartz as a result of flexure—687(A)
—— **and S. B. Brody.** Breaking up of single crystals of quartz—256(A)
—— **and S. Greenwald.** Thermal recrystallization of quartz—532(L)
**Deutsch, Martin** (see Good, Wilfred M.)—313, 673(L)
—— (see Peacock, Wendell C.)—306
**Dicke, R. H.** Radiometer for measuring thermal radiation at microwave frequencies—694(A)
—— (see Kyhl, R. L.)—694(A)
**Dickey, F. P.** (see Lagemann, R. T.)—545(A)
**Dillon, J. H.** Problem for the physicists of Ohio—703(T)
**DuBridge, L. A.** Microwave radar—676(T)
**Dufay, Jean** (see Dejardin, Georges)—685(A)
**Dunning, J. R.** (see Wu, C. S.)—236(L)
**Dželepow, B., M. Kopjova, and E. Vorobjov.** $\beta$-ray spectrum of $K^{40}$—538(L)

**Ebbighausen, E. G. and J. W. Coltman.** Fluorescent yield of calcium tungstate excited by x-rays—48(A)
**Edwards, J. E.** (see Farnham, John W.)—48(A)
—— (see Pool, M. L.)—49(A)
—— **and M. L. Pool.** Characteristic x-rays excited by beta-particles—549
—— **and M. L. Pool.** Characteristic x-rays excited by beta-particles—49(A)
—— **and M. L. Pool.** Radioactive Te from Sb bombardment—140
—— **and M. L. Pool.** Radioactive isotopes of Mo and Ma—253(A)
**Ehrenhaft, Felix.** Astrophysical phenomena and the magnetic current—702(A)
—— Helical movements of matter in the beam of light and the magnetic current—52(A)
—— Further observations on the helical movement of matter in sunlight—251(A)
—— Constant magnetic current and Heinrich Hertz—260(A)
—— Some thoughts about gravitation of celestial bodies and photophoretic forces—684(A)
**Eisenstein, A.** An x-ray method for measuring the thickness of thin crystalline films—252(A)
**Ekstein, H.** Forced vibration of piezoelectric crystals—257(A)
**Ellickson, R. T.** Some properties of infra-red sensitive phosphors—685(A)
—— **and W. L. Parker.** Effect of absorption on decay of infra-red sensitive phosphors—534(L)
**Elsasser, Walter M.** Induction effects in terrestrial magnetism. Part I. Theory—106
**Estermann, I., S. N. Foner, and O. Stern.** Mean free paths of cesium atoms in helium, nitrogen, and cesium vapor—256(A)
**Everhart, E.** (see Halpern, J.)—688(A)
**Ewell, Arthur W.** Ultraviolet lamps and ozone—685(A)
**Eyring, Henry** (see Williams, Ferd E.)—257(A)

**Failla, G.** Convenient dosage unit for radioactive isotopes internally administered—691(A)
**Fairbank, Henry A.** Small scale hydrogen liquefier—686(A)
**Fankucken, I.** Orientation of single crystals by the use of two simultaneous Bragg reflections—256(A)
**Farnham, John W., J. E. Edwards, and F. C. Blake.** Curved crystal spectrograph applied to determine the complete spectrum of all orders obtained when the camera is rotated about a proper pivot—48(A)
**Farr, H. K.** Microwave duplexing circuits—699(A)
**Ferrell, Oliver Perry.** Meteoric impact ionization observed on radar oscilloscopes—32(L)
**Feshbach, H.** (see Van de Graff, R. J.)—452, 47(A)
**Feshbach, Herman.** Production of mesons by electrons—690(A)
—— (see Hornbeck, John A.)—691(A)
**Feuer, Paula and Edward S. Akeley.** Scattering of electromagnetic radiation by a thin circular ring in a circular wave guide—697(A)
**Field, R. F.** Temperature coefficients of interfacial polarization in dielectrics—688(A)
**Finkelstein, R. J.** Normal reflection of a shock wave—677(A)
**Fisher, J. R.** (see Teal, G. K.)—686(A)
**Fisher, Leon H.** Some aspects of Meek's sparking equation—530(L)
**Fisk, J. B.** Magnetron generators—676(T)
**Fiske, Milan D.** Band-pass TR switch. Part I: The switching action—699(A)
**Foley, H. M.** Pressure broadening of spectral lines—616
—— Self-broadening in the 14$\mu$ band of HCN—628
**Foner, S. N.** (see Estermann, I.)—256(A)
**Fowler, W. A.** Matrix elements for positron decay—134(A)
**Fox, R. E.** (see Hipple, J. A.)—347, 257(A)
**Frank, N. H.** Phase stability of synchrotron orbits—689(A)
**French, Sidney J.** Address of welcome—674(T)
**Friedman, H.** (see Birks, L. S.)—49(A)
—— (see DerMateosian, E.)—689(A)
—— (see Muehlhause, C. O.)—46(A), 691(A)
**Frondel, Clifford.** Elastic deficiency and color of natural smoky quartz—543(L)
**Fuller, Wallace F. and A. A. Bless.** Geiger counter as an x-ray dosimeter—545(A)
**Furry, W. H. and R. Clark Jones.** Isotopes separation by thermal diffusion: Cylindrical case—459

**Galt, John K.** (see Pellam, John R.)—679(A)
**Gamertsfelder, G. R. and M. Goldhaber.** Reproducible neutron standard—368(L)
**Gammel, J. L.** (see Ginsburg, N.)—685(A)
**Gartlein, C. W.** Recent developments in procuring war surplus equipment—674(T)
**George, D. E.** (see Wells, J. W.)—540(L)
**Gilbarg, David.** Influence of atmospheric pressure on water entry phenomena—679(A)
**Gillette, F. N.** (see Haworth, L. J.)—254(A)
—— (see Manley, J. H.)—254(A)
**Gilman, G. W. and F. H. Willis.** Reflection of sound signals in the troposphere—677(A)
**Ginsburg, N. and J. L. Gammel.** Normal coordinates of a mono-substituted benzene molecule—685(A)

**Goertzel, G. and I. S. Lowen.** Angular correlation of successive γ-rays—533(L)
**Goldhaber, M.** (see Coltman, J. W.)—411
—— (see Gamertsfelder, G. R.)—368(L)
—— (see Yalow, A. A.)—47(A), 253(A)
—— **and A. A. Yalow.** Resonance scattering of group electrons—47(A)
**Goldstein, Herbert.** Frequency dependence of radar echoes from the surface of the sea—695(A)
**Good, Wilfred M. and Wendell C. Peacock.** Positron emission, electron capture competition in $Zn^{65}$—680(A)
—— **David Peaslee, and Martin Deutsch.** Experimental test of beta-ray theory for the positron emitters $Na^{22}$, $V^{48}$, $Mn^{52}$, $Co^{58}$—313; Erratum—673(L)
**Good, William E.** Inversion spectrum of ammonia—539(L)
**Goodman, B.** Effect of grain structure on the electrical conductivity of semiconductors—687(A)
—— (see Lawson, A. W.)—682(A)
**Gordy, Walter.** New method of determining electronegativity from other atomic properties—604
—— Relation between characteristic bond constants and electronegativities of the bonded atoms—130(L)
**Grahame, David C.** Resonance scattering of fast neutrons—369(L)
**Gray, R. B.** X-ray measurement of the thickness of silver plating—49(A)
**Greanias, E. C.** (see Kaiser, H. F.)—536(L)
**Green, J. B. and J. T. Lynn.** Zeeman effect in the spectrum of chlorine I—165
**Greenwald, S.** (see D'Eustachio, D.)—532(L)
**Grinten, W. van der** (see Swartz, C. E.)—252(A)
**Groetzinger, G. K.** (see Kurbatov, J. D.)—253(A)
**Groetzinger, Gerhart and Lloyd Smith.** Non-electrical scattering of charged mesotrons—690(A)
**Guth, Eugene.** Nuclear processes by polarization scattering of deuterons—47(A)

**Hackman, E. E.** Preliminary investigation of spark discharges along shock waves—130(L)
**Hadley, L. N. and D. M. Dennison.** Method of preparing absorbing surfaces for the infra-red—258(A)
**Haggenmacher, J. E.** Heat of vaporization of helium II below 1.5°K—242(L)
**Halpern, J., E. Everhart, R. A. Rapuano, and J. C. Slater.** Preliminary studies on the design of a microwave linear accelerator—688(A)
**Hamermesh, B.** (see Korff, S. A.)—155, 252(A)
**Hamermesh, M. and Julian Schwinger.** Scattering of slow neutrons by ortho- and paradeuterium—145
**Hamill, W. H.** (see Mrowca, B. A.)—51(A)
**Hamilton, Donald R.** Klystron—676(T)
**Hamtil, Charles N.** Effect of transverse pressure on the steady-state electrical conductivity of rocksalt—50(A)
**Hansen, W. W.** (see Bloch, F.)—127(L), 680(A)
—— (see Packard, Martin)—680(A)
**Harrison, George R.** (see McNally, J. Rand)—703(T)
**Havens, W. W., Jr.** (see Wu, C. S.)—236(L)
**Haworth, L. J.** Techniques of cathode-ray tube display circuits—676(T)
—— (see Manley, J. H.)—405
—— **and F. N. Gillette.** Slow neutron velocity spectrometer—254(A)
**Haynes, J. R.** High velocity vapor jets in sparks at mercury electrodes—693(A)
**Hazen, W. E.** (see Nassar, Salwa)—298
**Hector, L. Grant and Donald L. Woernley.** Dielectric constants of eight gases—101
**Heller, Wilfried.** New and rapid method for constructing quarter-wave plates, half-wave plates, half shades and ellipticity compensators—53(A)
—— Simple apparatus for demonstrating fluorescence, light scattering, and its polarization and depolarization—53(A)
**Henry, Hugh F.** Velocity of the anode spark produced in $CuSO_4$ solutions by application of an impulsive potential—693(A)
**Herlin, Melvin A. and Sanborn C. Brown.** Complex conductivity of electrical discharge in gas at microwave frequencies—696(A)
**Hershberger, W. D.** Thermal and acoustic effects attending absorption of microwaves by gases—695(A)
—— (see Walter, John E.)—694(A)
**Herzberg, G.** On the electronics structure of the nitrogen molecule—362
**Herzfeld, K. F.** Small deviations from diode behavior in crystal rectification—683(A)
**Hicks, Bruce L.** Diabatic flow of a compressible fluid—135(A)
—— Diabetic, rotational flow in two dimensions—250(A)
**Hill, A. G.** Microwave circuits—676(T)
**Hill, E. L.** Note on the relativistic problem of uniform rotation—488
**Hippel, A. von, F. G. Chesley, H. S. Denmark, P. B. Ulin, and E. S. Rittner.** Photoelectric mechanism of the thallous sulfide photo-conductive cell—685(A)
**Hipple, J. A.** (see Langer, A.)—691(A)
—— **R. E. Fox, and E. U. Condon.** Metastable ions formed by electron impact in hydrocarbon gases—347
—— **R. E. Fox, and E. U. Condon.** Study of metastable ions with the mass spectrometer—257(A)
**Hirsh, Frederick R., Jr.** Auger transitions—32(L)
**Hollenberg, A. V., S. Millman, and N. Kroll.** One centimeter rising sun magnetrons with 26 and 38 cavities—701(A)
**Holstein, T.** Initiation of high frequency gas discharges—50(A)
—— Phenomenological theory of the TR switch spike—698(A)
**Honig, Richard E.** Deuteron bombardments of organic compounds—257(A)
**Hornbeck, John A. and Herman Feshbach.** Scattering and absorption of high voltage x-rays in steel—691(A)
**Howe, C. E.** Symmetrical R-C parallel-T networks: output voltage phase as a function of frequency and of load resistance—703(T)
**Hudspeth, Emmett L.** Wave-guide acceleration of particles—671(L)
**Hughes, Donald J.** Cloud-chamber photographs of heavy particles at high altitudes—371

**Hull, G. F.** Fifty years of physics, a study in contrasts—676(T)
**Hunter, L. P.** Energy build-up in magnetrons—700(A)
—— (see Marshall, Fitz-Hugh)—48(A)

**Irvine, Jr., John W.** (see Clarke, E. T.)—680(A)

**Jabloński, Alexander.** Errata: General theory of pressure broadening of spectral lines—31
**Jacobs, Harold.** Dissociation energies of surface films of various oxides as determined by emission measurements of oxide coated cathodes—692(A)
**Jacobsmeyer, Vincent P.** Investigation of the surface photoelectric effect of metallic films under the influence of strong electrostatic fields—50(A)
**Jaffé, George.** On the statistical mechanics of systems involving molecular flow—688(A)
**Jauch, J. M.** On the inelastic photo-dissociation of the deuteron—275
—— On the inelastic photo-effect of the deuteron—252(A)
**Jehle, Herbert.** Statistical hypotheses in stellar dynamics—254(A)
—— Transformation theory of hydrodynamical equations—260(A)
**Jnanananda, Swami.** Beta-radiations of uranium $X_1$—570
**Johnson, J. B.** Enhanced thermionic emission from oxide cathodes—702(A)
—— Secondary emission of thermionic oxide cathodes—693(A)
**Johnson, V. A.** (see Lark-Horovitz, K.)—258(A)
—— **and K. Lark-Horovitz.** Theory of thermoelectric power in germanium—259(A)
—— **R. N. Smith and H. J. Yearian.** Semi-quantitative explanation of d.c. characteristics of crystal rectifiers—682(A)
**Jones, R. Clark** (see Furry, W. H.)—459

**Kaiser, H. F. and E. C. Greanias.** Synchro-betatron, electron accelerator guide fields—536(L)
**Kaplan, Joseph.** Forbidden line source—133(A)
**Ke, T'ing-Sui and Louis D. Smullin.** Gas discharge switches for controlling low power microwave signals—698(A)
**Keenan, P. C.** Shadowgraph method of determining the strength of a shock wave—677(A)
**Kellogg, J. M. B.** (see Autler, Stanley H.)—694(A)
**Kennedy, Joseph W.** (see Seaborg, G. T.)—366(L), 367(L)
—— **and Arthur C. Wahl.** Search for spontaneous fission in 94-239—367(L)
**Kenty, Carl, J. O. Aicher, E. B. Noel, A. Poritsky, and V. Paolino.** New band system in the green excited in a mixture of xenon and oxygen and the energy of dissociation of CO—36(L)
**Kikuchi, Chihiro.** Theory of the low mass neutral mesotron—125(L)
**Kimball, G. E.** Thermodynamics of relaxation processes—688(A)
**King, Allen L.** Maximum rate of multiplication of unicellular organisms—256(A)
**King, D. D.** Antenna impedance measurement—696(A)
**King, Ronold and David Middleton.** Cylindrical antenna: comparison of theories and experiment—696(A)
**Kingdon, K. H.** (see Lafferty, J. M.)—699(A)
**Kingshill, Konrad L. and Lloyd G. Lewis.** Structure of cosmic-ray air showers—159
**Kittel, Charles.** Theory of long period magnetic relaxation—640
**Knipp, Julian K.** Theory of the diode—700(A)
**Knowles, H. L.** Static direction finder—546(A)
**Koch, Jørgen.** Device producing ion beams homogeneous as to mass and energy—238(L)
**Koenig, H. P.** Absorption of slow mesotrons in lead, iron, aluminum, and water—253(A)
**Koenig, H. Paul.** Absorption of slow mesotrons in lead, iron, aluminum, and water—590
**Koller, R.** Fundamental properties of the vacuum switch—134(A)
**Kopjova, M.** (see Dželepow, B.)—538(L)
**Korff, S. A. and B. Hamermesh.** Energy distribution and number of cosmic-ray neutrons in the free atmosphere—155, 252(A)
**Krasik, S.** (see Alpert, D.)—698(A)
**Kroll, N.** (see Hollenberg, A. V.)—701(A)
**Kroll, Norman and Willis E. Lamb, Jr.** Theory of the rising sun magnetron anode—701(A)
**Kurbatov, J. D. and G. K. Groetzinger.** Correction of G-M counter data II—253(A)
**Kyhl, R. L., R. H. Dicke, and Robert Beringer.** Absorption of 1-cm electromagnetic waves by atmospheric water vapor—694(A)

**Ladenburg, R., C. C. Van Voorhis, and J. Winckler.** Interferometric study of gas flow around various objects in a free supersonic homogeneous air-jet—251(A)
—— (see Winckler, J.)—251(A)
**Lafferty, J. M. and K. H. Kingdon.** Improvements in the stability of the FP-54 electrometer tube—699(A)
**Lagemann, R. T., A. H. Nielsen, and F. P. Dickey.** New measurements on the infra-red spectrum of $C^{12}O^{16}$ and $C^{13}O^{16}$—545(A)
**Lamb, W. E., Jr.** (see Phillips, M.)—701(A)
**Lamb, Willis E., Jr.** Theory of a microwave spectroscope—694(A)
—— (see Kroll, Norman)—701(A)
**Langer, A. and J. A. Hipple.** Ionization potential of $CH_3$—691(A)
**Lapp, R. E.** Origin of large cosmic-ray bursts—321
—— Transition effect for large cosmic-ray bursts in iron—253(A)
**Lark-Horovitz, K.** (see Johnson, V. A.)—259(A)
—— (see Whaley, R. M.)—683(A)
—— **and V. A. Johnson.** Theory of resistivity in germanium alloys—258(A)
—— **A. E. Middleton, E. P. Miller, and I. Walerstein.** Electrical properties of germanium alloys. I. Electrical conductivity and hall effect—258(A)
—— **A. E. Middleton, E. P. Miller, W. W. Scanlon, and I. Walerstein.** Electrical properties of germanium alloys. II. Thermoelectric power—259(A)

**Lasof, Solomon.** Plastic deformation of zinc as a function of strain rate—687(A)
**Lassen, N. O.** On the variation along range of the $H\rho$-distribution and the charge of the fission fragments of the light group—137
**Lattes, C. and G. Wataghin.** On the abundance of nuclei in the universe—237(L)
**Lawson, A. W., B. Goodman, and L. I. Schiff.** High frequency rectification efficiency of radar crystal detectors—682(A)
**Lawson, J. L.** Threshold signals in the presence of noise—676(T)
**Leibfried, G.** (see Becker, R.)—34(L)
**Leonard, R. W.** Critical examination of sound velocity measurements—136(A)
—— Method for the precision measurement of the velocity of sound in air—136(A)
**Leverenz, H. W.** Corpuscular *vs.* undulatory excitation of phosphors—686(A)
**Levinstein, H. and H. R. Crane.** High intensity velocity selector for neutral atoms—679(A)
**Lewis, Harold and David Bohm.** Low energy $\beta$-spectrum of $Cu^{64}$—129(L)
**Lewis, Lloyd G.** (see Kingshill, Konrad L.)—159
**Lewis, Margaret N.** (see Stephens, William E.)—43(L)
**Libby, W. F.** Atmospheric helium three and radiocarbon from cosmic radiation—671(L)
**Liebowitz, Benjamin.** Calculus of finite precision—A correction—131(L)
**Linder, E. G. and R. L. Sproull.** Maximum efficiency of reflex oscillators—700(A)
**Lindsay, George A.** (see Barton, Vola P.)—48(A)
**Little, R. N., R. W. Long, and C. E. Mandeville.** Scattering of neutrons by magnesium—414
**Livingood, J. J.** Resnatron—676(T)
**Lofgren, E. J.** (see Richardson, J. Reginald)—669(L)
**London, F.** On an inequality of quantum hydrodynamics—254(A)
**Long, R. W.** (see Little, R. N.)—414
**Lopes, J. Leite.** High energy neutron-proton scattering and the meson theory of nuclear forces with strong coupling—252(A)
**Lovell, William Vail.** An electromagnet for non-magnetic substances—251(A)
**Lowen, I. S.** (see Goertzel, G.)—533(L)
**Lü, Lieh-Yang** (see Oster, Francis)—531(L)
**Lucht, C. M., M. Mann, and R. Smoluchowski.** X-ray microradiographic study of strains in crystals—256(A)
**Luebke, E. A.** (see Manley, J. H.)—405
**Lynn, J. T.** (see Green, J. B.)—165
**Lype, E. F.** Thermodynamic equilibria of higher order—652

**Ma, S. T.** Redundant zeros in the discrete energy spectra in Heisenberg's theory of characteristic matrix—668(L)
**MacKenzie, K. R.** (see Richardson, J. Reginald)—669(L)
**Mandeville, C. E.** (see Bennett, W. E.)—418
—— (see Little, R. N.)—414
**Manley, J. H., F. B. Berger, and F. N. Gillette.** Experiments with a slow neutron velocity spectrometer—254(A)
—— **L. J. Haworth and E. A. Luebke.** Velocity dependence of the absorption of boron for slow neutrons—405
**Mann, Alfred K.** (see Ney, Edward P.)—239(L)
**Mann, M.** (see Lucht, C. M.)—256(A)
**Margenau, H.** Conduction and dispersion of ionized gases at high frequencies—508
**Margenau, Henry.** Conductivity of electrons in a gas at microwave frequencies—698(A)
**Marinelli, L. D., R. F. Brinckerhoff, and E. H. Quimby.** Determination of the average $\beta$-ray energy in artificial radioactivity and its use in radiation dosimetry—690(A)
**Marshall, Fitz-Hugh and L. P. Hunter.** Photomultiplier x-rays detector—48(A)
**Marx, Erich.** Influence of polarized light on the falling-off effect of the limiting potential of Einstein's photoelectric law—523
**Masket, A. Victor.** Forced vibrations of a whirling wire—52(A)
**Mason, W. P.** Elastic, piezoelectric, and dielectric constants of potassium dihydrogen phosphate and ammonium dihydrogen phosphate—173
**Mayer, Ernest.** Extinction of gaseous discharges—51(A)
**McDaniel, B. D.** (see Bacher, R. F.)—443
**McIntosh, L. R.** (see Buechner, W. W.)—692(A)
**McMillan, Edwin M.** Origin of the synchrotron—534(L)
—— (see Seaborg, G. T.)—366(L)
**McMillan, F. L.** (see Montgomery, C. G.)—699(A)
**McMillen, J. Howard.** Elastic waves in bars—250(A)
**McNally, J. Rand, George R. Harrison, and Eugene H. Rowe.** Hollow cathode for spectrographic analysis—703(T)
**McQueen, John H.** (see Ney, Edward P.)—41(L)
**Mehta, G. K.** (see Tawde, N. R.)—245(L)
**Meissner, K. W.** Interferometric method for the determination of the resolving power of spectroscopes—685(A)
**Meitner, Lise.** Attempt to single out some fission processes of uranium by using the differences in their energy release—676(T)
**Mellen, G. L.** Radium source ion gauge—691(A)
**Mendelssohn, K.** (see Daunt, J. D.)—126(L)
**Merchant, M. Eugene.** Studies in friction I. "Solid" *versus* "polar" boundary films—250(A)
**Meyerhof, W. E.** (see Stephens, W. E.)—42(L), 244(L)
**Middleton, A. E.** (see Lark-Horovitz, K.)—258(A), 259(A)
**Middleton, David** (see King, Ronold)—696(A)
**Miller, E. P.** (see Lark-Horovitz, K.)—258(A), 259(A)
**Miller, P. H., Jr.** New type of electrostatic generator—666(L)
**Millman, S.** (see Hollenberg, A. V.)—701(A)
**Millman, Sidney and Arnold Nordsieck.** Development of the rising sun magnetron anode structure—701(A)
**Montgomery, C. G., F. L. McMillan, I. H. Dearnley, and C. S. Pearsall.** Cross sections for capture of electrons from TR tube recovery measurements—699(A)
**Montgomery, D. J.** Relativistic interaction of electrons on Podolsky's generalized electrodynamics—117
**Morris, T. F.** Two-body problem in Einstein's and Birkhoff's theories—541(L)

**Moyer, B. J., B. Peters and F. H. Schmidt.** Absorption of slow neutrons by $Cd^{113}$—666(L)
**Mrowca, B. A., R. L. Anthony, and W. H. Hamill.** Specific heats of hevea—51(A)
**Mrozowski, S.** Forbidden lines of Bismuth BiI—169
**Muehlhause, C. O. and H. Friedman.** Geiger-Muller counter technique for high counting rates—46(A)
—— **and H. Friedman.** Measurement of betatron radiation with G-M counter—691(A)

**Nassar, Salwa and W. E. Hazen.** Cascade showers and mesotron-produced secondaries in lead—298
**Neddermeyer, S. H.** Measurement of ultra-short time differences—702(A)
**Neher, H. V.** Some electrical characteristics of reflex tubes —134(A)
**Neumann, J. von** (see Seeger, R. J.)—677(A)
**Ney, Edward P. and Alfred K. Mann.** Mass measurement with a single field mass spectrometer—239(L)
—— **and John H. McQueen.** Mass-spectrographic study of the isotopes of silicone—41(L)
**Nielsen, A. H.** (see Lagemann, R. T.)—545(A)
**Nierenberg, W. A.** Separation of gas-mixtures flowing through porous media—259(A)
**Noble, Robert H.** Thermal emissivities of certain glasses and plastics—703(T)
**Noel, E. B.** (see Kenty, Carl)—36(L)
**Nordsieck, Arnold** (see Millman, Sidney)—701(A)
**North, D. O.** Response of non-linear devices to signal and noise—676(T)

**Ogg, Jr., Richard A.** Bose-Einstein condensation of trapped electron pairs. Phase separation and superconductivity of metal-ammonia solutions—243(L); Erratum—544(L)
—— Physical interaction of electrons with liquid dielectric media. Properties of metal-ammonia solutions—668(L)
**Olsen, Leonard O.** (see Crittenden, Eugene C., Jr.)—703(A)
**O'Neal, R. D. and G. Scharff-Goldhaber.** Determination of absolute neutron intensities—368(L)
**Opatowski, I.** On the deviation of the biological effects of radiations from the Bunsen-Roscoe law—54(A)
—— On a statistical approach to biological effects of radiations—51(A)
**Osborne, R. K.** (see Peacock, W. C.)—679(A)
—— **and W. C. Peacock.** Beta- and gamma-ray spectra of $La^{140}$—679(A)
**Oster, Francis, Sheng-Lin Ch'u, and Lieh-Yang Lü.** East-west asymmetry of cosmic radiation at a geomagnetic latitude of 28°31′ and an estimation of the difference of the exponents of the absorption law for the polar and the equatorial regions—531(L)

**Packard, Martin** (see Bloch, F.)—127(L), 680(A)
—— **W. W. Hansen, and Felix Bloch.** Nuclear induction—680(A)
**Page, Leigh.** Magnetic antenna—645
—— **and Norman I. Adams, Jr.** Space charge in cylindrical magnetron—494
—— **and Norman I. Adams, Jr.** Space charge in plane magnetron—492
**Paolino, V.** (see Kenty, Carl)—36(L)
**Pardue, L. A. and Clyde B. Crawley.** Kentucky electrostatic generator—545(A)
**Parker, W. L.** (see Ellickson, R. T.)—534(L)
**Patterson, A. L.** Ambiguities in x-ray and electron diffraction analysis—256(A)
**Peacock, W. C.** (see Osborne, R. K.)—679(A)
—— **and R. K. Osborne.** Control and recording circuits for a magnetic beta-ray spectrograph—679(A)
**Peacock, Wendell C.** (see Good, Wilfred M.)—680(A)
—— **and Martin Deutsch.** Disintegration schemes of radioactive substances IX. $Mn^{52}$ and $V^{48}$—306
**Pearsall, Anna M.** General Electric fellowships for science teachers. 1945 summer session. 2. Teachers' viewpoint—674(T)
**Pearsall, C. S.** (see Montgomery, C. G.)—699(A)
**Peaslee, David** (see Good, Wilfred M.)—313, 673(L)
**Pellam, John R. and John K. Galt.** Ultrasonic absorption and velocity measurements in liquids by means of pulse techniques—679(A)
**Pepinsky, R.** Multi-element x-ray tube for diffraction studies—546(A)
**Peters, B.** (see Moyer, B. J.)—666(L)
**Phillips, M. and W. E. Lamb, Jr.** Space-charge frequency dependence of a magnetron cavity—701(A)
**Placzek, C.** On the theory of the slowing down of neutrons in heavy substances—423
**Plantenberg, Sister Gonzaga** (see Weber, A. H.)—649
**Plantenberg, M. Gonzaga** (see Weber, A. H.)—51(A)
**Platt, Joseph B.** Physics of radar—674(T)
—— Structure in the x-ray $K$ absorption edge of metallic potassium—337
**Podolsky, Boris.** Relativistic transformation of current and charge densities—255(A)
**Polachek, H.** (see Seeger, R. J.)—677(A)
—— **and R. J. Seeger.** Three-shock configurations—677(A)
**Pollard, E. C.** Use of a proportional counter for meson detection—689(A)
**Pollard, W. G.** (see Present, R. D.)—53(A)
**Pollock, H. C.** Combination of betatron and synchrotron for electron acceleration—125(L)
**Pool, M. L.** Atomic energy research program for the immediate future—703(T)
—— (see Edwards, J. E.)—49(A), 140, 253(A), 549
—— **and J. E. Edwards.** X-rays from radioactive Te—49(A)
**Poritsky, A.** (see Kenty, Carl)—36(L)
**Posin, D. Q.** Electrical breakdown in air at microwave frequencies—696(A)
**Posin, D. Q.** Lowering of electrical breakdown field strength at microwave frequencies due to externally-applied magnetic field—541(L)
**Posin, Daniel Q.** Radioautography with $P^{32}Sr^{89}$—702(A)
**Post, Richard F.** Proposed high energy particle accelerator —the cavitron—126(L)
**Pound, R. V.** (see Purcell, E. M.)—37(L)
—— (see Torrey, H. C.)—680(A)
—— **E. M. Purcell, and H. C. Torrey.** Measurement of magnetic resonance absorption by nuclear moments in a solid—681(A)

**Powell, Wilson M.** Cloud-chamber analysis of cosmic rays at 14,120 feet—385
**Present, R. D.** (see DeBethune, A. J.)—259(A)
—— **and W. G. Pollard.** On the self-diffusion of a pure gas through a long capillary when the mean free path is comparable to the capillary diameter—53(A)
**Preston, M. A.** Radii of the nuclei of natural $\alpha$-emitters—535(L)
**Purcell, E. M.** Spontaneous emission probabilities at radio frequencies—681(A)
—— (see Pound, R. V.)—681(A)
—— (see Torrey, H. C.)—680(A)
—— **H. C. Torrey, and R. V. Pound.** Resonance absorption by nuclear magnetic moments in a solid—37(L)

**Quimby, E. H.** (see Marinelli, L. D.)—690(A)

**Rainwater, L. J.** (see Wu, C. S.)—236(L)
**Rapuano, R. A.** (see Halpern, J.)—688(A)
**Rathgeber, Henri D.** Influence of intercrystalline forces on beta-ray absorption—239(L)
**Regener, Victor H.** Decade counting circuits—46(A)
—— Improved decade counting circuit—689(A)
**Reid, Allen F.** Synthesis by nuclear recoil—530(L)
**Rice, S. O.** Fourier series in random processes—676(T)
**Richards, H. T.** (see Bennett, W. E.)—418
**Richardson, J. Reginald, K. R. MacKenzie, E. J. Lofgren, and Bryon T. Wright.** Frequency modulated cyclotron—669(L)
**Richardson, John M. and William Shockley.** Solution of the equation for the propagation of waves of finite amplitude in one dimension—250(A)
**Rittner, E. S.** (see Hippel, A. von)—685(A)
**Roe, Glenn M.** Normal modes in the theory of wave guides—255(A)
**Rogers, F. T., Jr.** On the theory of the electrostatic beta-particle energy-spectrograph. IV—537(L)
**Rojansky, V.** General Electric fellowships for science teachers. 1945 summer session. 1. Administrative viewpoint—674(T)
**Rothstein, Jerome.** Poisoning of oxide cathodes by gold—693(A)
**Rowe, Eugene H.** (see McNally, J. Rand)—703(T)
**Rubin, S.** Excitation energy of excited $Li^7$—134(A)
**Rush, J. Harold.** Current developments in national policy affecting scientific research. (1) Science foundation legislation; (2) Domestic control of atomic energy; (3) World control of atomic energy—703(T)

**Sachs, R. G.** Some properties of very intense shock waves—514
—— Theory of crystal rectifiers—682(A)
**Sachs, Robert G.** Magnetic moments of light nuclei—514
**Saibel, Edward.** Thermodynamic criterion for the fracture of metals—667(L)
**Saier, Eleanor L.** (see Coggeshall, Norman D.)—257(A)
**Samuel, A. L.** Equivalent circuit for the microwave TR tube—699(A)
—— (see Crandell, C. F.)—698(A)
—— (see Clark, J. W.)—698(A)
**Saxon, David S.** Modulation and tuning of cavity oscillators by electron beams—700(A)
—— **and Julian Schwinger.** Electron orbits in the synchrotron—702(A)
**Scanlon, W. W.** (see Lark-Horovitz, K.)—259(A)
**Scanlon, Wayne.** Quantitative method for the spectroscopic analysis of potassium-sodium solution—52(A)
**Scharff-Goldhaber, G.** (see O'Neal, R. D.)—368(L)
**Schiff, L. I.** Noise in radar crystal detectors—682(A)
—— (see Lawson, A. W.)—682(A)
**Schmidt, F. H.** (see Moyer, B. J).—666(L)
**Schönberg, Mario.** Classical theory of the point electron—211
**Schremp, E. J.** Generalization of Nyquist's thermal noise theorem—255(A)
—— Minimal noise amplifiers—695(A)
—— Theorem on equivalent representations of an arbitrary linear network—259(A)
—— (see Twiss, R. Q.)—696(A)
**Schultz, H. L.** System for high speed counting of nuclear particles—689(A)
**Schumb, Walter C.** Preparation and physical properties of sulfur hexafluoride—692(A)
**Schwinger, Julian.** Polarization of neutrons by resonance scattering in helium—681(A)
—— (see Hamermesh, M.)—145
—— (see Saxon, David S.)—702(A)
**Schwinn, M. W.** Vacuum tube spark timer—703(T)
**Seaborg, G. T., E. M. McMillan, J. W. Kennedy, and A. C. Wahl.** Radioactive element 94 from deuterons on uranium—366(L)
—— **A. C. Wahl, and J. W. Kennedy.** Radioactive element 94 from deuterons on uranium—367(L)
**Seeger, R. J.** (see Polachek, H.)—677(A)
—— **J. von Neumann, and H. Polachek.** Interaction of shock waves—677(A)
**Serin, B.** Dependence of the diffusion coefficient on concentration—687(A)
—— Heat treatment of semi-conductors and contact rectification—357
—— (see Stephens, W. E.)—42(L), 244(L)
**Sherr, R.** (see Sommers, Jr., H. S.)—21
**Shockley, William** (see Richardson, John M.)—250(A)
**Shrader, E. F.** Partial separation of the isotopes of chlorine by thermal diffusion—439
**Shutt, R. P.** Concerning the anomalous scattering of mesotrons—128(L)
—— Some experimental results concerning mesotrons—261
**Simon, Ralph.** Performance of a hot wire Clusius and Dickel column—596
**Slater, J. C.** (see Halpern, J.)—688(A)
**Sleator, William, Jr.** Fast neutron collision cross sections of C and H—681(A)
**Smith, Charles G.** Cathode dark space and negative glow of a mercury arc—96
—— (see Crittenden, Eugene C., Jr.)—703(A)
**Smith, L. G.** Photographic investigation of the reflection of plane shocks in air—678(A)
—— (see Taub, A. H.)—678(A)

**Smith, Lloyd** (see Groetzinger, Gerhart)—690(A)
**Smith, Lloyd P.** Quantum effects in the interaction of electrons with high frequency fields and the transition to classical theory—195
**Smith, R. N.** Contact capacity of crystal rectifiers—683(A)
—— (see Johnson, V. A.)—682(A)
**Smoluchowski, R.** (see Lucht, C. M.)—256(A)
**Smullin, Louis D.** Low pressure gas discharges in microwave TR tubes—698(A)
—— (see Ke, T'ing-Sui)—698(A)
**Snowdon, S. C.** Multivibrator theory—134(A)
**Sommers, H. S., Jr. and R. Sherr.** Activity of $N^{16}$ and $He^{6}$—21
**Sonkin, Simon.** Crown of thorns tuning of magnetrons—701(A)
**Sperduto, A.** (see Buechner, W. W.)—692(A)
**Sperduto, Anthony.** Method of determining focal spot size in high voltage radiography—692(A)
**Sproull, R. L.** (see Linder, E. G.)—700(A)
**Stephens, W. E.** Pulsed mass spectrometer with time dispersion—691(A)
—— **and Margaret N. Lewis.** Autoradiographic detection of aluminum—43(L)
—— **B. Serin, and W. E. Meyerhof.** Method for measuring effective contact e.m.f. between a metal and a semiconductor—42(L); Erratum—244(L)
**Stern, O.** (see Estermann, I.)—256(A)
**Stewart, Ellen Swomley.** Dispersion of the velocity and anomalous absorption of sound in hydrogen—632
**Stewart, G. W.** Heat conduction effects with liquid crystals and suspended particles—51(A)
—— Theory of the Herschel-Quincke tube—53(A)
**Stuhlman, Otto, Jr.** Modulus of elasticity and column action as applied to the structure of the giant reed (*Arundo donax*)—547(A)
**Sun, Kuan-Han.** Mass of the neutron—240(L)
**Swann, W. F. G.** Fluctuations in measurements of ionization per centimeter of path in proportional counters—690(A)
—— (see Weisz, Paul B.)—690(A)
**Swanson, D. C.** Ceramic dielectrics—546(A)
**Swartz, C. E. and W. van der Grinten.** Motion of electrolytes in magnetic field—252(A)

**Tamburino, Sara.** Particular type of cosmic-ray stars observed with photographic plate—35(L)
**Taub, A. H. and L. G. Smith.** Theory of reflection of shock waves—678(A)
**Tawde, N. R. and G. K. Mehta.** Spectrum of high frequency discharge in air in relation to active nitrogen—245(L)
**Teal, G. K., J. R. Fisher, and A. W. Treptow.** New bridge photo-cell employing a photo-conductive effect in silicon. Some properties of high purity silicon—686(A)
**Tiedeman, John A.** Recent developments in color photography—674(T)
**Torrey, H. C., E. M. Purcell, and R. V. Pound.** Theory of magnetic resonance absorption by nuclear moments in solids—680(A)
—— (see Pound, R. V.)—681(A)
—— (see Purcell, E. M.)—37(L)
**Townes, Charles Hard.** Interpretation of cosmic noise—radio waves from extraterrestrial sources—695(A)
**Treptow, A. W.** (see Teal, G. K.)—686(A)
**Trump, John G.** Insulation of high voltages in vacuum—692(A)
**Tsien, San-Tsiang.** $\gamma$-rays of radium D—38(L)
—— **M. Bachelet, and G. Bouissiéres.** Fine structure of the $\alpha$-rays from protoactinium—39(L)
**Turner, Louis A.** Atomic energy from $U^{238}$—366(L)
**Twiss, R. Q. and E. J. Schremp.** Equivalent noise representation of multi-grid amplifier tubes—696(A)

**Uhlenbeck, G. E.** Theory of random processes—676(T)
**Ulin, P. B.** (see Hippel, A. von)—685(A)
**Urquhart, R. C.** (see Buechner, W. W.)—692(A)

**Valente, Frank A. and Herbert Ivan Zagor.** Fast neutron resonance with nitrogen—55
**Valley, G. E.** Amplification of low frequency signals—676(T)
**Van de Graaff, R. J.** (see Buechner, W. W.)—692(A)
—— **W. W. Buechner, and H. Feshbach.** Experiments on the elastic single scattering of electrons by nuclei—452, 47(A)
**Van Vleck, J. H.** Atmospheric absorption of microwaves—676(T)
**Van Voorhis, C. C.** (see Ladenburg, R.)—251(A)
—— (see Winckler, J.)—251(A)
**Veksler, V.** Concerning some new methods of acceleration of relativistic particles—244(L)
**Vorobjov, E.** (see Dželepow, B.)—538(L)

**Wack. Paul E.** Phase transitions at low temperatures in natural and synthetic rubber—52(A)
—— (see Dart, S. L.)—52(A)
**Wahl, A. C.** (see Seaborg, G. T.)—366(L), 367(L)
—— (see Kennedy, Joseph W.)—367(L)
**Walerstein, I.** (see Lark-Horovitz, K.)—258(A), 259(A)
**Wallman, Henry.** Pulse amplifiers—676(T)
**Walter, John E. and W. D. Hershberger.** Absorption of microwaves by gases II—694(A)
**Wang, Theodore J.** On increasing the effectiveness of a betatron—42(L)
**Warburton, F. W.** Reciprocal electric force—40(L)
—— Note on accelerational-velocital magnetic forces—49(A)
**Warren, Dana T.** Analysis of cosmic-ray fine structure. Part I. Earlier Missouri observations—78
—— Analysis of cosmic-ray fine structure. Part II. Mexico City observations—382
**Wataghin, Gleb.** On the nuclear photo-effect—33(L)
—— (see Lattes, C.)—237(L)
**Watts, J. M.** (see Wells, H. W.)—540(L)
**Weber, A. H. and M. Gonzaga Plantenberg.** Rapid and direct measurement of vapor pressure of liquid metals—51(A)
—— **and M. Gonzaga Plantenberg.** Rapid and direct measurement of vapor pressure of liquid metals—649
**Wehe, H. G.** World peace established on natural law and order instead of legislation—684(A)

**Weisskoff, V. F.** (see Conwell, E.)—258(A)
**Weisz, Paul B. and W. F. G. Swann.** Ionization spectrum of cosmic-ray electrons and mesotrons—690(A)
**Welles, Sherrerd B.** Partial separation of the oxygen isotopes by thermal diffusion and the deuteron bombardment of $O^{17}$—586
**Wells, H. W., J. M. Watts, and D. E. George.** Detection of rapidly moving ionospheric clouds—540(L)
**Weyl, F. Joachim.** Numerical aspects of quantitative interferometry—677(A)
**Whaley, R. M. and K. Lark-Horovitz.** Effect of various atmospheres on germanium crystal rectifiers—683(A)
**Wiedenbeck, Marcellus L.** Lifetimes of metastable states—47(A)
—— Neutron yields from the photo- and electro-disintegration of beryllium—235(L)
—— Note on the lifetime of metastable states—567
**Williams, Dudley and Philip Yuster.** Isotopic constitution of tellurium, silicon, tungsten, molybdenum, and bromine—556
**Williams, Ferd E. and Henry Eyring.** Mechanism of the luminescence of solids—257(A)
**Willis, F. H.** Measured values of ultrasonic absorption and velocity in liquid mixtures—250(A)
—— (see Gilman, G. W.)—677(A)
**Wilson, Charles R.** Atomic bomb and international relations—674(T)
**Wilson, H. A.** Spherical shell nuclear model—538(L)
**Winckler, J.** (see Ladenburg, R.)—251(A)
—— **C. C. Van Voorhis, and R. Ladenburg.** Optical analysis of the structure of supersonic inhomogeneous air-jets—251(A)
**Winckler, John.** Interaction of shock waves and boundary layers in supersonic gas flow—678(A)
**Winter, D. F.** Fast sweep synchroscope—695(A)
**Woernley, Donald L.** (see Hector, L. Grant)—101
**Woodyard, J. R.** Comparison of the high frequency accelerator and betatron as a source of high energy electrons—50(A)
**Wright, Byron T.** (see Richardson, J. Reginald)—669(L)
**Wu, C. S., L. J. Rainwater, W. W. Havens, Jr., and J. R. Dunning.** Neutron scattering in ortho- and parahydrogen and the range of nuclear forces—236(L)

**Yalow, A. A.** (see Goldhaber, M.)—47(A)
—— **and M. Goldhaber.** Wide and sharp neutron groups—47(A)
—— **R. S. Yalow, and M. Goldhaber.** Upper limit of the number of low energy neutrons from a Ra-$\alpha$-Be source—253(A)
**Yalow, R. S.** (see Yalow, A. A.)—253(A)
**Yearian, H. J.** D.c. characteristics of Ge and Si crystal rectifiers—682(A)
—— (see Johnson, V. A.)—682(A)
**Young, J. L., III** (see Beams, J. W.)—537(L)
**Yuster, Philip** (see Williams, Dudley)—556

**Zagor, Herbert Ivan** (see Valente, Frank A.)—55
**Zener, Clarence.** Theoretical criterion for the initiation of slip bands—128(L)

# Analytic Subject Index to Volume 69

References with (A) are to abstracts of papers presented at meetings of the American Physical Society. References with (L) are to Letters to the Editor.


**Absorption**
- Of microwaves by gases, W. D. Hershberger—695(A); II, J. E. Walter and W. D. Hershberger—694(A)
- Of microwaves by water vapor, S. H. Autler, G. E. Becker, and J. M. B. Kellogg—694(A)
- In oxygen of one-half cm waves, R. Beringer—693(A)
- Of 1-cm electromagnetic waves by water vapor, R. L. Kyhl, R. H. Dicke, and R. Beringer—694(A)

**Acoustics**
- Dispersion and anomalous absorption of sound in hydrogen, E. S. Stewart—632
- Reflection of signals in the troposphere, G. W. Gilman and F. H. Willis—677(A)
- Reflection from triplanes, spheres, and disks, C. J. Burbank—136(A)
- Sound velocity measurements, R. W. Leonard—136(A)
- Theory of Herschel-Quincke tube, G. W. Stewart—53(A)
- Ultrasonic absorption and velocity measurements in liquids, F. H. Willis—250(A); J. R. Pellam and J. K. Galt—679(A)
- Velocity of sound at high pressures, R. G. Sachs—514

**Aerodynamics** (see also **Hydrodynamics**)
- Gas flow in free supersonic homogenous air-jet, R. Ladenburg, C. C. Van Voorhis, and J. Winckler—251(A)
- Optical analysis of supersonic inhomogeneous air-jets, J. Winckler, C. C. Van Voorhis, and R. Ladenburg—251(A)

**Astrophysics**
- Astrophysical phenomena and magnetic current, F. Ehrenhaft—702(A)
- Light of night sky in ultraviolet, G. Dejardin and J. Dufay—685(A)
- Nuclear photo-effect, G. Wataghin—33(L)
- Radio waves from extraterrestrial sources, C. H. Townes—695(A)
- Statistical hypotheses in stellar dynamics, H. Jehle—254(A)
- Transformation theory of hydrodynamical equations, H. Jehle—260(A)

**Biophysics**
- Artificial radioactivity and radiation dosimetry, L. D. Marinelli, R. F. Brinckerhoff, and E. H. Quimby—690(A)
- Bunsen-Roscoe law, deviations, I. Opatowski—54(A)
- Effects of radiations, statistical approach, I. Opatowski—51(A)
- Geiger counter as x-ray dosimeter, W. F. Fuller and A. A. Bless—545(A)
- Multiplication of unicellular organisms, A. L. King—256(A)
- Neutron absorption in tissue, P. C. Aebersold and G. A. Anslow—1
- Radioactive isotopes internally administered, dosage, G. Failla—691(A)
- Radioautography with $P^{32}$ and $Sr^{89}$, D. Q. Posin—702(A)
- Synthesis by nuclear recoil, A. F. Reid—530(L)
- Ultraviolet lamps and ozone, A. W. Ewell—685(A)

**Broadening of spectral lines**
- General theory, errata, A. Jabloński—31
- Of HCN, H. M. Foley—628
- Pressure broadening, theory, H. M. Foley—616

**Chemical reactions**
- Deuteron bombardments of organic compounds, R. E. Honig—257(A)
- Natural oxidation of Al, Fe, and Cu, S. Anderson—52(A)
- Properties of sulfur hexafluoride, W. C. Schumb—692(A)
- Synthesis by nuclear recoil, A. F. Reid—530(L)

**Cosmic radiation**
- Absorption of slow mesotrons in Pb, Fe, Al, and $H_2O$, H. P. Koenig—253(A); 590
- Absorptive effects relating to fine structure, D. Cooper—546(A)
- Analysis of fine structure, D. T. Warren—78; 382
- $C^{14}$ and $He^3$ produced by neutrons, W. F. Libby—671(L)
- Cloud-chamber photographs of heavy particles at 15,000 feet, D. J. Hughes—371
- Cosmic-ray stars observed with photographic plate, S. Tamburino—35(L)
- East-west asymmetry, F. Oster, Sheng-Lin Ch'u, and Lieh-Yang Lü—531(L)
- Heavy particles in cloud chambers at 14,000 feet, W. M. Powell—385
- Ionization spectrum of electrons and mesotrons, P. B. Weisz and W. F. G. Swann—690(A)
- Large cosmic-ray bursts, origin of, R. E. Lapp—321
- Neutrons in the atmosphere, S. A. Korff and B. Hamermesh—155; 252(A)
- Non-electrical scattering of charged mesotrons, G. Groetzinger and L. Smith—690(A)
- Production of mesotrons, I. Bloch—575
- Recurrences of small bursts, J. W. Broxon—46(A)
- Showers and mesotron-produced secondaries in Pb, S. Nassar and W. E. Hazen—298
- Structures of air showers, K. L. Kingshill and L. G. Lewis—159
- Transition effect for cosmic-ray bursts in Fe, R. E. Lapp—253(A)

**Crystal structure**
- Indexing of crystal faces of $\alpha$-quartz, F. C. Blake—49(A), 703(A)

**Crystalline state**
- Bose-Einstein condensation of trapped electron pairs, R. A. Ogg, Jr.—243(L); 544(L)

**Crystalline state** (*continued*)
Breaking up of single thin crystals of quartz, D. D'Eustachio and S. B. Brody—256(A)
Criterion for initiation of slip bands, C. Zener —128(L)
Long period magnetic relaxation, C. Kittel—640
Properties of high purity silicon, G. K. Teal, J. R. Fisher, and A. W. Treptow—686(A)
Plastic deformation of Zn, S. Lasof—687(A)
Recrystallization of quartz, flexure, D. D'Eustachio—687(A)
Thermal recrystallization of quartz, D. D'Eustachio and S. Greenwald—532(L)

**Dielectric constants** (see **Dielectrics and dielectric properties**)
**Dielectrics and dielectric properties**
Of barium titanate, oscillographic study, A. de Bretteville, Jr.—687(A)
Ceramic dielectrics, D. C. Swanson—546(A)
Electrons in liquid dielectric media, R. A. Ogg, Jr.—668(L)
Of He, Ne, A, $H_2$, $O_2$, $N_2$, $CO_2$, and air, L. G. Hector and D. L. Woernley—101
Of potassium dihydrogen phosphate and ammonium dihydrogen phosphate, W. P. Mason—173
Temperature coefficients of interfacial polarization, R. F. Field—688(A)
**Diffraction of electrons** (see **Electron diffraction**)
**Diffusion** (see also **Thermal diffusion**)
Dependence of coefficient on concentration, B. Serin—687(A)
Flow of binary gas mixtures through a capillary, A. J. DeBethune and R. D. Present—259(A)
Separation of gas-mixtures; flow through porous media, W. A. Nierenberg—259(A)
Through a long capillary, R. D. Present and W. G. Pollard—53(A)
**Discharge of electricity in gases**
Cathode dark space and negative glow, Hg arc, C. G. Smith—96
Complex conductivity at microwave frequencies, M. A. Herlin and S. C. Brown—696(A)
Conduction of ionized gases at high frequencies, H. Margenau—508; 698(A)
Cross sections for capture of electrons, C. G. Montgomery, F. L. McMillan, I. H. Dearnley, and C. S. Pearsall—699(A)
Electrical breakdown at microwave frequencies, D. Q. Posin—696(A); 541(L)
Extinction of gaseous discharges, E. Mayer—51(A)
High frequency gas discharges, T. Holstein—50(A)
Meek's sparking equation, L. H. Fisher—530(L)
Vapor jets in sparks at Hg electrodes, J. R. Haynes—693(A)
**Discharge of electricity in high vacua** (see also **Thermionic emission; High voltage tubes and machines**)
Insulation of high voltages in vacuum, J. G. Trump—692(A)
Space charge in cylindrical magnetron, L. Page and N. I. Adams, Jr.—494
Space charge in plane magnetron, L. Page and N. I. Adams, Jr.—492
**Disintegration and excitation of nucleus** (see also **Radioactivity**)
Angular correlation of successive $\gamma$-rays, G. Goertzel and I. S. Lowen—533(L)
Deuteron bombardment of $O^{17}$, S. B. Welles—586
Excitation energy of excited $Li^7$, S. Rubin—134(A)
Excitation functions, deuteron reactions on Cu, Mg, and Al, E. T. Clarke and J. W. Irvine, Jr.—680(A)
Fast neutron resonance with nitrogen, F. A. Valente and H. I. Zagor—55
Inelastic photo-dissociation of the deuteron, J. M. Jauch —252(A); 275
Matrix elements for positron decay, W. A. Fowler—134(A)
Neutron yields from photo- and electro-disintegration of Be, M. L. Wiedenbeck—235(L)
Nuclear photo-effect, G. Wataghin—33(L)
Nuclear processes by polarization, E. Guth—47(A)
**Dissociation**
Energies of surface films of oxides; $Ta_2$, $O_4$, and ZrO, H. Jacobs—692(A)
**Dissociation, heat of** (see also **Molecular structure and constants**)
Dissociation of CO, C. Kenty, J. O. Aicher, E. B. Noel, A. Poritsky, and V. Paolino—36(L)
**Dynamics**
Forced vibrations of a whirling wire, A. V. Masket—52(A)

**Elasticity** (see also **Wave motion**)
Of colored quartz, C. Frondel—543(L)
Constants of potassium dihydrogen phosphate and ammonium dihydrogen phosphate, W. P. Mason—173
Elastic waves in bars, J. H. McMillen—250(A)
Elasticity and column action, giant reed (*Arundo Donax*), O. Stuhlman, Jr.—547(A)
Forced vibrations of piezoelectric crystals, H. Ekstein—257(A)
Linear dissipative anisotropic elastic systems; solutions for, G. D. Camp—134(A); 502
Plasticity *versus* elasticity in stretched rubber, M. L. Braun—545(A)
Propagation of waves of finite amplitude, J. M. Richardson and W. Shockley—250(A)
Reflection of a shock wave, R. J. Finkelstein—677(A)
Reflection of shock waves, theory, A. H. Taub and L. G. Smith—678(A)
Shock waves and boundary layers in supersonic gas flow, J. Winckler—678(A)
Shock waves in gases, R. G. Sachs—514
Shock waves in a tube, W. Bleakney—678(A)
Spark discharges along shock waves, E. E. Hackman—130(L)
Strains in crystals, C. M. Lucht, M. Mann, and R. Smoluchowski—256(A)
Tangential boundary conditions, impedance representation, G. D. Camp—501
Thermodynamic criterion for fracture, E. Saibel—667(L)

**Elasticity** (*continued*)
Three-shock configurations, H. Polachek and R. J. Seeger—677(A)
**Electrical circuits**
Cavity of a linear electron accelerator, E. S. Akeley—255(A)
Equivalent circuit for microwave TR tube, A. L. Samuel—699(A)
Equivalent representations of an arbitrary linear network, E. J. Schremp—259(A)
Interaction of shock waves, R. J. Seeger, J. v. Neumann, and H. Polachek—677(A)
Minimal noise amplifiers, E. J. Schremp—695(A)
Modulation and tuning of cavity oscillators, D. S. Saxon—700(A)
Multivibrator theory, S. C. Snowdon—134(A)
Noise in radar crystal detectors, L. I. Schiff—682(A)
Noise representation of multi-grid amplifier tubes, R. Q. Twiss and E. J. Schremp—696(A)
Normal modes in wave guides, G. M. Roe—255(A)
Nyquist's thermal noise theorem, E. J. Schremp—255(A)
Pre-corona discharge, reference potential in voltage stabilizers, S. C. Brown—696(A)
Pulse transformer, W. H. Bostick—696(A)
Rectification efficiency of radar crystal detectors, A. W. Lawson, B. Goodman, and L. I. Schiff—682(A)
**Electrical conductivity and resistance**
Contact capacity of rectifiers, R. N. Smith—683(A)
Contact e.m.f. between a metal and a semi-conductor, W. E. Stephens, B. Serin, and W. E. Meyerhof—42(L)
Diamagnetism and superconductivity, W. Band—241(L)
Diode behavior in crystal rectification, K. F. Herzfeld—683(A)
Effect of gases on Ge rectifiers, R. M. Whaley and K. Lark-Horovitz—683(A)
Of germanium alloys, K. Lark-Horovitz, A. E. Middleton, E. P. Miller, and I. Walerstein—258(A)
Ge and Si crystal rectifiers, H. J. Yearian—682(A)
Grain structure and electrical conductivity, B. Goodman—687(A)
High voltage characteristics of Ge rectifiers, S. Benzer—683(A)
Image force and tunnel effect in rectifiers, E. D. Courant—684(A)
Noise in radar crystal detectors, L. I. Schiff—682(A)
Rectification efficiency of radar crystal detectors, A. W. Lawson, B. Goodman, and L. I. Schiff—682(A)
Rectification series, W. H. Brattain—682(A)
Semi-conductors and contact rectification, B. Serin—357
Semi-quantitative explanation of crystal rectifiers, V. A. Johnson, R. N. Smith, and H. J. Yearian—682(A)
Spark produced in $CuSO_4$ solutions, H. F. Henry—693(A)
Superconductivity in an electron assembly, W. Band—41(L)
Superconductivity and magnetic energy, W. Band—241(L)
Superconductivity of metal-ammonia solutions, R. A. Ogg, Jr.—243(L); 544(L)
Thallous sulfide photo-conductive cell, A. v. Hippel, F. G. Chesley, H. S. Denmark, P. B. Ulin, and E. S. Rittner—685(A)
Theory of crystal rectifiers, R. G. Sachs—682(A)
Theory of impurity scattering in semiconductors, E. Conwell and V. F. Weisskopf—258(A)
Theory of resistivity in germanium alloys, K. Lark-Horovitz and V. A. Johnson—258(A)
Transfer phenomena and indeterminacy, superconductivity, J. G. Daunt and K. Mendelssohn—126(L)
Transverse pressure, conductivity of rocksalt, C. N. Hamtil—50(A)
Velocity of propagation of photo-effect, F. C. Brown—686(A)
**Electromagnetic theory**
Accelerational-velocital magnetic forces, F. W. Warburton—49(A)
Antenna impedance measurement, D. D. King—696(A)
Classical theory of point electron, M. Schönberg—211
Cylindrical antenna, R. King and D. Middleton—696(A)
Diffraction pattern of a circular aperture, C. L. Andrews—684(A)
Electromagnetism and gravitation, H. C. Corben—225
Interaction of electrons with fields, quantum effects, L. P. Smith—195
Movements of matter in a beam of light, F. Ehrenhaft—52(A); 251(A)
Narrow resonant slit in a wave guide partition, E. S. Akeley—697(A)
Photophoretic forces, F. Ehrenhaft—684(A)
Radar echoes from surface of the sea, H. Goldstein—695(A)
Radiation in a medium with random inhomogeneities, P. G. Bergmann—255(A)
Reciprocal electric force, F. W. Warburton—40(L)
Relativistic interaction of electrons, D. J. Montgomery—117
Scattering of radiation by a thin circular ring, P. Feuer and E. S. Akeley—697(A)
Space-charge frequency dependence of magnetron cavity, M. Phillips and W. E. Lamb, Jr.—701(A)
**Electron diffraction**
Ambiguities in diffraction analysis, A. L. Patterson—256(A)
**Electronic tubes** (see also **Methods and instruments**)
Characteristics of reflex tubes, H. V. Neher—134(A)
Conduction of ionized gases at high frequencies, H. Margenau—508; 698(A)
Copper disk seal TR tubes, J. W. Clark, A. E. Andersen, and A. L. Samuel—698(A)
Cross sections for capture of electrons in TR tubes, C. G. Montgomery, F. L. McMillan, I. H. Dearnley, and C. S. Pearsall—699(A)
Efficiency of reflex oscillators, E. G. Linder and R. L. Sproull—700(A)
Electron orbits in the synchrotron, D. S. Saxon and J. Schwinger—702(A)
Energy build-up in magnetrons, L. P. Hunter—700(A)
Equivalent circuit for microwave TR tube, A. L. Samuel—699(A)

**Electronic tubes** (*continued*)
Gas discharge switches for low power microwave signals, T'ing-Sui Ke and L. D. Smullin—698(A)
Gas discharges in microwave TR tubes, L. D. Smullin—698(A)
High power 'rising sun' magnetron, A. Ashkin—701(A)
Integral cavity TR switch, D. Alpert and S. Krasik—698(A)
Linear electrical characteristics of band-pass TR switch, W. C. Caldwell—699(A)
Magnetron anode structure, S. Millman and A. Nordsieck—701(A)
Modulation and tuning of cavity oscillators, D. S. Saxon—700(A)
Principles of the resnatron, F. W. Boggs—700(A)
Recovery time of TR tubes, C. F. Crandell, A. L. Samuel, and J. W. Clark—698(A)
'Rising sun' magnetron anode, theory of, N. Kroll and W. E. Lamb, Jr.—701(A)
Space-charge and bunching of electron beams, L. Brillouin—700(A)
Space charge in cylindrical magnetron, L. Page and N. I. Adams, Jr.—494
Space-charge frequency dependence of magnetron cavity, M. Phillips and W. E. Lamb, Jr.—701(A)
Space charge in plane magnetron, L. Page and N. I. Adams, Jr.—492
Stability of FP-54 electrometer tube, J. M. Lafferty and K. H. Kingdon—699(A)
Switching action of band-pass TR switch, M. D. Fiske—699(A)
Theory of the diode, J. K. Knipp—700(A)
Theory of TR switch spike, T. Holstein—698(A)
Tuning of magnetrons, S. Sonkin—701(A)
One centimeter magnetrons with numerous cavities, A. V. Hollenberg, S. Millman, and N. Kroll—701(A)

**Electrons** (see also **Positron**)
Classical theory of point electron, M. Schönberg—211

**Electrophoresis**
Balancing sedimentation by electrophoresis in high centrifugal fields, J. W. Beams—546(A)

**Errata**
Bose-Einstein condensation of trapped electron pairs. Phase separation and superconductivity of metal-ammonia solutions, R. A. Ogg, Jr.—544(L)
Calculus of finite precision—A correction, B. Liebowitz—131(L)
Experimental test of beta-ray theory for the positron emitters $Na^{22}$, $V^{48}$, $Mn^{52}$, $Co^{56}$, W. M. Good, David Peaslee, and Martin Deutsch—673(L)
General theory of pressure broadening of spectral lines, A. Jabloński—31
A method for measuring effective contact e.m.f. between a metal and a semi-conductor, W. E. Stephens, B. Serin, and W. E. Meyerhof—244(L)

**Evaporation**
Of helium II below 1.5°K, J. E. Haggenmacher—242(L)

**Field currents**
Insulation of high voltages in vacuum, J. G. Trump—692(A)

**Fission of nucleus**
Atomic energy from $U^{238}$, L. A. Turner—366(L)
$H\rho$-distribution and charge of the fission fragments, N. O. Lassen—137
In 94–239, J. W. Kennedy and A. C. Wahl—367(L)

**Fluorescence**
Fluorescent yield of calcium tungstate, E. G. Ebbighausen and J. W. Coltman—48(A)

**Friction**
"Solid" *versus* "polar" boundary films, M. E. Merchant—250(A)

**Gamma-rays** (see **Radioactivity**)

**Hall effect**
Of germanium alloys, K. Lark-Horovitz, A. E. Middleton, E. P. Miller, and I. Walerstein—258(A)

**Heat conduction** (see **Thermal conductivity**)

**Heat of vaporization**
Of helium II below 1.5°K, J. E. Haggenmacher—242(L)

**High voltage tubes and machines** (see also **Methods and instruments**)
Acceleration of relativistic particles, new method, V. Veksler—244(L); E. M. McMillan—534(L)
Combination of betatron and synchrotron, H. C. Pollock—125(L)
High energy particle accelerator—the cavitron, R. F. Post—126(L)
Radiation losses in the induction accelerator, J. P. Blewett—87
Wave-guide accelerator, E. L. Hudspeth—671(L)

**Hydrodynamics**
Air-water entry cavities, D. Gilbarg—679(A)
Diabatic flow of a compressible fluid, B. L. Hicks—135(A)
Diabatic, rotational flow in two dimensions, B. L. Hicks—250(A)
Impedance representation of tangential boundary surface forces, G. D. Camp—135(A)
Inequality of quantum hydrodynamics, F. London—254(A)
Transformation theory of hydrodynamical equations, H. Jehle—260(A)

**Instruments** (see **Methods and instruments**)

**Ionization by collision** (see **Ionization potentials**)

**Ionization potentials**
Of $CH_2$, A. Langer and J. A. Hipple—691(A)
Metastable ions in hydrocarbon gases, J. A. Hipple, R. E. Fox, and E. U. Condon—257(A); 347

**Ionosphere**
Meteoric ionization observed on radar oscilloscopes, O. P. Ferrell—32(L)
Rapidly moving ionospheric clouds, H. W. Wells, J. M. Watts, and D. E. George—540(L)

**Isotopes**
Abundance of nuclei in the universe, C. Lattes and G. Wataghin—237(L)
Mass measurement with a single field mass spectrometer, E. P. Ney and A. K. Mann—239(L)
Separation of A isotopes by thermal diffusion, R. Simon—596

**Isotopes** (*continued*)
Separation of isotopes of Cl, E. F. Shrader—439
Separation of O isotopes by thermal diffusion, S. B. Welles—586
Of Si, E. P. Ney and J. H. McQueen—41(L)
Of Te, Si, W, Mo, and Br, D. Williams and P. Yuster—556

**Kinetic theory**
Flow of binary gas mixtures through a capillary, A. J. DeBethune and R. D. Present—259(A)
Fokker-Planck equation for a reflecting boundary, T. H. Berlin—688(A)

**Liquids** (see also **Hydrodynamics**)
Boundary films, friction, M. E. Merchant—250(A)
**Luminescence**
Mechanism of luminescence, F. E. Williams and H. Eyring—257(A)

**Magnetic properties**
Diamagnetism and superconductivity, W. Band—241(L)
Long period magnetic relaxation, C. Kittel—640
Magnetic current, F. Ehrenhaft—260(A)
Magnetic moments of light nuclei, R. G. Sachs—611
Motion of electrolytes in magnetic field, C. E. Swartz and W. Van der Grinten—252(A)
Of small samples, E. C. Crittenden, Jr., C. S. Smith, Jr. and L. O. Olsen—703(A)
**Mechanics** (see **Dynamics**)
**Mechanics, quantum—general**
Calculus of finite precision—A correction, B. Liebowitz—131(L)
Discrete energy spectra in Heisenberg's theory, S. T. Ma—668(L)
Inequality of quantum hydrodynamics, F. London—254(A)
Interaction of electrons with fields, L. P. Smith—195
Second quantization, R. Becker and G. Leibfried—34(L)
Theory of point electron, M. Schönberg—211
**Mechanics, statistical**
Of systems involving molecular flow, G. Jaffé—688(A)
**Mesotrons**
Absorption in Pb, Fe, Al, and $H_2O$, H. P. Koenig—253(A); 590
Anomalous scattering, R. P. Shutt—128(L); 261
Low mass neutral mesotron, theory of, Chihiro Kikuchi—125(L)
Non-electrical scattering, G. Groetzinger and L. Smith—690(A)
Production by electrons, H. Feshbach—690(A)
Production in stratosphere, I. Bloch—575
**Microwaves** (see **Electromagnetic theory; Electronic tubes**)
**Methods and instruments**
Absorbing surfaces for the infra-red, L. N. Hadley and D. M. Dennison—258(A)
Acceleration of relativistic particles, V. Veksler—244(L); E. M. McMillan—534(L)
Alpha-ray spectrograph, W. Y. Chang—60
Antenna impedance measurement, D. D. King—696(A)
Balancing sedimentation by electrophoresis in high centrifugal fields, J. W. Beams—546(A)
Bridge photo-cell, G. K. Teal, J. R. Fisher, and A. W. Treptow—686(A)
Cavity of a linear electron accelerator, E. S. Akeley—255(A)
Chemical analysis of alloys, J. Ball and F. C. Blake—703(A)
Circle diagram for resonant microwave systems, W. Altar—697(A)
Combination of betatron and synchrotron, H. C. Pollock—125(L)
Computer for solving linear simultaneous equations, C. E. Berry—135(A)
Contact e.m.f. between a metal and a semi-conductor, W. E. Stephens, B. Serin, and W. E. Meyerhof—42(L)
Copper disk seal TR tubes, J. W. Clark, A. E. Andersen, and A. L. Samuel—698(A)
Counting of nuclear particles, H. L. Schultz—689(A)
Curved crystal spectrograph, J. W. Farnham, J. E. Edwards, and F. C. Blake—48(A); J. Ball and F. C. Blake—703(A)
Decade counting circuits, V. H. Regener—46(A); 689(A)
Detection of Al in Si, W. E. Stephens and M. N. Lewis—43(L)
Effectiveness of betatron, T. J. Wang—42(L)
Electromagnet for non-magnetic substances, W. V. Lovell—251(A)
Electron accelerator, stationary electromagnetic modes, E. S. Akeley—50(A)
Electrostatic generator at Kentucky, L. A. Pardue and C. B. Crawley—545(A)
Electrostatic generator using sulphur hexafluoride insulation, W. W. Buechner, R. J. Van de Graaff, A. Sperduto, E. A. Burrill, L. R. McIntosh, and R. C. Urquhart—692(A)
Fast sweep synchroscope, D. F. Winter—695(A)
Fluorescence, light scattering, and its polarization and depolarization, demonstration, W. Heller—53(A)
Focal spot size in high voltage radiography, A. Sperduto—692(A)
Focusing of electrostatic analyzer, F. T. Rogers, Jr.—537(L)
Frequency modulated cyclotron, J. R. Richardson, K. R. MacKenzie, E. J. Lofgren, and B. T. Wright—669(L)
Geiger counter as x-ray dosimeter, W. F. Fuller and A. A. Bless—545(A)
G-M counter data, correction of, J. D. Kurbatov and G. K. Groetzinger—253(A)
G-M counter technique, C. O. Muehlhause and H. Friedman—46(A)
Generator suitable for measurement of small magnetic intensities, S. J. Barnett—135(A)
Guide fields in the synchro-betatron, H. F. Kaiser and E. C. Greanias—536(L)
High centrifugal fields, J. W. Beams and J. L. Young, III—537(L)
High energy particle accelerator—the cavitron, R. F. Post—126(L)

**Methods and instruments** (*continued*)
High frequency accelerator and betatron, comparison, J. R. Woodyard—50(A)
Hydrogen liquefier, H. A. Fairbank—686(A)
Integral cavity TR switch, D. Alpert and S. Krasik—698(A)
Integration of $\sin^2 x\, dx/x$, S. M. Christian—546(A)
Ion beams homogeneous as to mass and energy, J. Koch—238(L)
Ion gauge with radium source, G. L. Mellen—691(A)
Ionization in proportional counters, fluctuations, W. F. G. Swann—690(A)
Magnetic antenna, L. Page—645
Magnetic beta-ray spectrograph, recording circuits, W. C. Peacock and R. K. Osborne—679(A)
Magnetic properties of small samples, E. C. Crittenden, Jr., C. S. Smith, Jr., and L. O. Olsen—703(A)
Mass measurement with a single field mass spectrometer, E. P. Ney and A. K. Mann—239(L)
Microwave duplexing circuits, H. K. Farr—699(A)
Microwave linear accelerator, J. Halpern, E. Everhart, R. A. Rapuano, and J. C. Slater—688(A)
Microwave spectroscope, theory of, W. E. Lamb, Jr.—694(A)
Minimal noise amplifiers, E. J. Schremp—695(A)
Multi-element x-ray tube, R. Pepinsky—546(A)
Multivibrator theory, S. C. Snowdon—134(A)
New type electrostatic generator, P. H. Miller, Jr.—666(L)
Non-linear automatic control systems, M. Avramy—697(A)
Nuclear magnetic moments, measurement of, F. Bloch, W. W. Hansen, and M. Packard—127(L); 680(A); M. Packard, W. W. Hansen, and F. Bloch—680(A)
Optical analysis of supersonic inhomogeneous air-jets, J. Winckler, C. C. Van Voorhis, and R. Ladenburg—251(A)
Orientation of single crystals, Bragg reflections, I. Fankuchen—256(A)
Phase stability of synchrotron orbits, N. H. Frank—689(A)
Photographic investigations of reflection of plane shocks, L. G. Smith—678(A)
Photomultiplier x-ray detector, F. H. Marshall and L. P. Hunter—48(A)
Pre-corona discharge, reference potential in voltage stabilizers, S. C. Brown—696(A)
Proportional counter for meson detection, E. C. Pollard—689(A)
Pulse transformer design, W. H. Bostick—697(A)
Pulsed mass spectrometer, W. E. Stephens—691(A)
Quantitative interferometry, gas dynamics, F. J. Weyl—677(A)
Quarter-wave plates, half-wave plates, half shades and ellipticity compensators, W. Heller—53(A)
"Racetrack" accelerator for electrons, H. R. Crane—542(L)
"Racetrack" accelerator, stability of orbits, D. M. Dennison and T. H. Berlin—542(L)
Radiation losses in the induction accelerator, J. P. Blewett—87
Radioautography with $P^{32}$ and $Sr^{89}$, D. Q. Posin—702(A)
Radiometer for microwave frequencies, R. H. Dicke—694(A)
Resolving power of spectroscopes, interferometric method, K. W. Meissner—685(A)
Separation of gas-mixtures, W. A. Nierenberg—259(A)
Sine-wave generator, S. J. Barnett—133(A)
Slow neutron velocity spectrometer, L. J. Haworth and F. N. Gillette—254(A)
Sound velocity, precision measurement, R. W. Leonard—136(A)
Spectroscopic analysis of K-Na solution, W. Scanlon—52(A)
Static direction finder, H. L. Knowles—546(A)
Strains in crystals, x-ray microradiographic study, C. M. Lucht, M. Mann, and R. Smoluchowski—256(A)
Strength of a shock wave, P. C. Keenan—677(A)
Stress-strain machine, S. L. Dart, R. L. Anthony, and P. E. Wack—52(A)
Sulfur hexafluoride, preparation of, W. C. Schumb—692(A)
Synchrotron, origin of, E. M. McMillan—534(L)
Thallous sulfide photo-conductive cell, A. v. Hippel, F. G. Chesley, H. S. Denmark, P. B. Ulin, and E. S. Rittner—685(A)
Thermal diffusion column, R. Simon—596
Thermal diffusion, cylindrical case, W. H. Furry and R. C. Jones—459
Thickness measurements of coatings by x-ray absorption, L. S. Birks and H. Friedman—49(A); R. B. Gray—49(A)
Thickness of thin crystalline films, x-ray method, A. Eisenstein—252(A)
Ultra-short time measurement, S. H. Neddermeyer—705(A)
Ultrasonic absorption and velocity measurements in liquids, pulse techniques, J. R. Pellam, and J. K. Galt—679(A)
Ultraviolet lamps and ozone, A. W. Ewell—685(A)
Vacuum switch, R. Koller—134(A)
Vacuum valve, rapidly acting, D. D'Eustachio—251(A)
Vapor pressure of liquid metals, A. H. Weber and G. Plantenberg—51(A); 649
Vapors for self-quenched G-M counters, E. DerMateosian and H. Friedman—689(A)
Velocity selector for neutral atoms; vacuum rotor, H. Levinstein and H. R. Crane—679(A)
Wave-guide accelerator, E. L. Hudspeth—671(L)
**Molecular structure and constants** (see also **Spectra, molecular**, etc.)
Bond constants and electronegativities of the bonded atoms, W. Gordy—130(L)
Electronegativity; other atomic properties, W. Gordy—604
Electronic structure of $N_2$, G. Herzberg—362
Normal coordinates of benzene, N. Ginsburg and J. L. Gammel—685(A)

**Neutrons**
Absorption by boron-velocity dependence, J. H. Manley, L. J. Haworth, and E. A. Luebke—405
Absorption by $Cd^{113}$, B. J. Moyer, B. Peters, and F. H. Schmidt—666(L)
Absorption in gases, walls, and tissue, P. C. Aebersold and G. A. Anslow—1
Absorption of neutrons, velocity spectrometer, R. F. Bacher, C. P. Baker, and B. D. McDaniel—443
Albedo of thermal neutrons, M. Ageno—241(L)
Capture cross sections, J. W. Coltman and M. Goldhaber—411
Collision cross sections of C and H, W. Sleator, Jr.—681(A)
Cosmic-ray neutrons in the atmosphere, S. A. Korff and B. Hamermesh—155; 252(A)
Determination of absolute intensities, R. D. O'Neal and G. Scharff-Goldhaber—368(L)
Low energy neutrons from a Ra-α-Be, upper limit, A. A. Yalow, R. S. Yalow, and M. Goldhaber—253(A)
Mass of neutron, Kuan-Han Sun—240(L)
Neutron groups, A. A. Yalow and M. Goldhaber—47(A)
Polarization by resonance scattering, J. Schwinger—681(A)
Reproducible neutron standards, G. R. Gamertsfelder and M. Goldhaber—368(L)
Resonance scattering of group neutrons, M. Goldhaber and A. A. Yalow—47(A)
Scattering by Mg, R. N. Little, R. W. Long, and C. E. Mandeville—414
Scattering in ortho- and parahydrogen, range of nuclear forces, C. S. Wu, L. J. Rainwater, W. W. Havens, Jr., and J. R. Dunning—236(L)
Slow neutron velocity spectrometer, L. J. Haworth and F. N. Gillette—254(A)
Slow neutron velocity spectrometer, experimental results, J. H. Manley, F. B. Berger, and F. N. Gillette—254(A)
Slowing down in heavy substances; theory, G. Placzek—423
Spin of neutron, M. Hamermesh and J. Schwinger—145
Yield function of D+D neutrons, W. E. Bennett, C. E. Mandeville, and H. T. Richards—418
Yields from photo- and electro-disintegration of Be M. L. Wiedenbeck—235(L)

**Nuclear moments and spin**
Absorption by nuclear magnetic moments, E. M. Purcell, H. C. Torrey, and R. V. Pound—37(L)
Magnetic moments of light nuclei, R. G. Sachs—611
Magnetic resonance absorption, nuclear moments, experimental, R. V. Pound, E. M. Purcell, and H. C. Torrey—681(A)
Magnetic resonance absorption, nuclear moments, theory, H. C. Torrey, E. M. Purcell, and R. V. Pound—680(A)
Nuclear induction, F. Bloch, W. W. Hansen, and M. Packard—127(L); 680(A); M. Packard, W. W. Hansen, and F. Bloch—680(A)
Relativistic correction, P. Caldirola—608
Spontaneous emission probabilities, relaxation time, E. M. Purcell—681(A)

**Nuclear structure** (see also **Disintegration and excitation of nucleus**)
Excited states of nucleus, J. M. Jauch—252(A); 275
Heavy-electron pair theory, J. M. Blatt—285
Lifetime of metastable states, M. L. Wiedenbeck—567
Neutron-proton scattering, meson theory of nuclear forces, J. L. Lopes—252(A)
Nuclear resonances, schematic treatment, G. Breit—472
Spherical shell nuclear model, H. A. Wilson—538(L)

**Optical instruments** (see **Methods and instruments**)

**Philosophy of physics**
Natural law and order, H. G. Wehe—684(A)

**Phosphorescence**
Corpuscular *vs.* undulatory excitation, H. W. Leverenz—686(A)
Decay of infra-red sensitive phosphors, R. T. Ellickson and W. L. Parker—534(L)
Infra-red sensitive phosphors, R. T. Ellickson—685(A)

**Photo-conductivity**
Photo-sensitive characteristics of Ge rectifier, S. Benzer—683(A)
Thallous sulfide photo-conductive cell, A. v. Hippel, F. G. Chesley, H. S. Denmark, P. B. Ulin, and E. S. Rittner—685(A)
Velocity of propagation of photo-effect, F. C. Brown—686(A)

**Photoelectric effect and properties; cells**
Falling-off effect of limiting potential, E. Marx—523
Influence of strong electrostatic fields, V. P. Jacobsmeyer—50(A)

**Piezoelectric effect**
Constants of potassium dihydrogen phosphate and ammonium dihydrogen phosphate, W. P. Mason—173
Forced vibrations of piezoelectric crystals, H. Ekstein—257(A)

**Polymerization; Properties of polymers**
Phase transitions at low temperatures in rubber, P. E. Wack—52(A)
Plasticity *versus* elasticity in stretched rubber, M. L. Braun—545(A)
Use of polymers in quarter-wave plates, half-wave plates, half shades and ellipticity compensators, W. Heller—53(A)

**Positrons**
Fine structure of positronium, G. Beck—532(L)

**Proceedings of the American Physical Society**
St. Louis, Missouri, Meeting November 30–December 1, 1945—44
University of California, Los Angeles, California, Meeting January 12, 1946—133
New York, Annual Meeting January 24–26, 1946—246
Southeastern Section, Atlanta, Georgia, Meeting April 12–13, 1946—545
New York State Section, Hamilton, New York, Meeting April 13, 1946—674
Cambridge, Massachusetts, Meeting April 25–27, 1946—674

**Proceedings of the American Physical Society** (*continued*)
Ohio Section, Columbus, Ohio, Meeting May 4, 1946—703

**Quantum mechanics** (see **Mechanics, quantum**)

**Radar** (see **Electromagnetic theory; Electronic tubes;** and **Electrical circuits**)
**Radio** (see also **Ionosphere; Electromagnetic theory; Electronic tubes;** and **Electrical circuits**)
**Radioactivity** (see also **Disintegration of nucleus**)
Alpha-ray spectra of Po, W. Y. Chang—254(A)
Alpha-particles from Po, W. Y. Chang—60
Artificial radioactivity and radiation dosimetry, $\beta$-ray energy, L. D. Marinelli, R. F. Brinckerhoff, and E. H. Quimby—690(A)
Beta-radiations of uranium $X_1$, S. Jnanananda—570
Beta-ray theory for positron emitters, test of, W. M. Good, D. Peaslee, and M. Deutsch—313; Erratum—673(L)
$\beta$-spectrum of $Cu^{64}$, H. Lewis and D. Bohm—129(L)
$C^{14}$ and $He^3$ from atmospheric N, W. F. Libby—671(L)
Disintegration of substances IX. $Mn^{52}$ and $V^{48}$, W. C. Peacock and M. Deutsch—306
Fine structure of $\alpha$-rays from protoactinium, Tsien San-Tsiang, M. Bachelet, and G. Bouissières—39(L)
$\gamma$-rays of radium D, Tsien San-Tsiang—38(L)
Intercrystalline forces and beta-ray absorption, H. D. Rathgeber—239(L)
Lifetimes of metastable states, M. L. Wiedenbeck—47(A)
Of Mo and Ma, J. E. Edwards and M. L. Pool—253(A)
Of $N^{16}$ and $He^6$, H. S. Sommers, Jr. and R. Sherr—21
Nuclear radii of $\alpha$-emitters, M. A. Preston—535(L)
Positron emission, electron capture competition in $Zn^{65}$, W. M. Good and W. C. Peacock—680(A)
Of $K^{40}$, B. Dželepow, M. Kopjova, and E. Vorobjov—536(L)
Radioactive element 94, G. T. Seaborg, E. M. McMillan, J. W. Kennedy, and A. C. Wahl—366(L); G. T. Seaborg, A. C. Wahl, and J. W. Kennedy—367(L)
Radioactive isotopes in compounds, A. F. Reid—530(L)
Radioactive isotopes, dosage, G. Failla—691(A)
Spectra of $La^{140}$, R. K. Osborne and W. C. Peacock—679(A)
Of Te, J. E. Edwards and M. L. Pool—49(A); 140
Units of strength of sources, E. U. Condon, L. F. Curtiss—672(L)
**Rectifiers** (see **Electrical conductivity and resistance**)
**Relativity**
Electromagnetism and gravitation, H. C. Corben—225
Interaction of electrons, D. J. Montgomery—117
Magnetic moment of deuteron, relativistic correction, P. Caldirola—608
Transformation of current and charge densities, B. Podolsky—255(A)
Two-body problem, T. F. Morris—541(L)
Uniform rotation, E. L. Hill—488

**Scattering of atoms and molecules**
Mean free paths of Cs atoms in He, $N_2$, and Cs vapor, I. Estermann, S. N. Foner, and O. Stern—256(A)

**Scattering of electrons, neutrons, and ions** (see also **Electron diffraction**)
Albedo of thermal neutrons, M. Ageno—241(L)
Anomalous scattering of mesotrons, R. P. Shutt—128(L); 261
Elastic single scattering of electrons, R. J. Van de Graaff, W. W. Buechner, and H. Feshbach—47(A)
Multiple scattering and curvature measurements, H. A. Bethe—689(A)
Neutron collision cross sections of C and H, W. Sleator, Jr.—681(A)
Neutron-proton scattering and the meson theory, J. L. Lopes—252(A)
Of neutrons by Mg, R. N. Little, R. W. Long, and C. E. Mandeville—414
Polarization of neutrons by scattering, J. Schwinger—681(A)
Resonance scattering of fast neutrons, D. C. Grahame—369(L)
Resonance scattering, M. Goldhaber and A. A. Yalow—47(A)
Single scattering of electrons, R. J. Van de Graaff, W. W. Buechner, and H. Feshbach—452
Spin dependence of neutron-proton interaction, M. Hamermesh and J. Schwinger—145
**Semi-conductors** (see **Electrical conductivity and resistance**)
**Solid state** (see **Crystalline state**)
**Sound** (see **Acoustics**)
**Specific heat**
Of hevea, GR-S and GR-I polymers, B. A. Mrowca, R. L. Anthony, and W. H. Hamill—51(A)
**Spectra, absorption**
Of $NH_3$, W. E. Good—539(L)
Infra-red absorption of methane, foreign gases, N. D. Coggeshall and E. L. Saier—257(A)
**Spectra, atomic**
Forbidden lines of BiI, S. Mrozowski—169
**Spectra, general**
Forbidden lines, source of, J. Kaplan—133(A)
High frequency discharge in air, active nitrogen, N. R. Tawde and G. K. Mehta—245(L)
Light of night sky in ultraviolet, G. Dejardin and J. Dufay—685(A)
Pressure broadening, theory, H. M. Foley—628
**Spectra, molecular** (see also **Molecular structure and constants**)
Electronic structure of $N_2$, G. Herzberg—362
Infra-red spectrum of $C^{12}O^{16}$ and $C^{13}O^{16}$, R. T. Lagemann, A. H. Nielsen, and F. P. Dickey—545(A)
Intensity distribution, rotational lines of AlO, F. P. Coheur and P. M. Coheur—240(L)
Self broadening of HCN, H. M. Foley—628
**Superconductivity** (see **Electrical conductivity and resistance**)

**Terrestrial magnetism**
Induction effects, theory, W. M. Elsasser—106
**Thermal conductivity**
Effects with liquid crystals and suspended particles, G. W. Stewart—51(A)

**Thermal diffusion**
Isotope separation, cylindrical case, W. H. Furry and R. C. Jones—459
Performance of a diffusion column, R. Simon—596
Separation of isotopes of Cl, E. F. Shrader—439
Separation of isotopes of O, S. B. Welles—586
**Thermionic emission; Emitting surfaces**
Enhanced thermionic emission, J. B. Johnson—702(A)
Poisoning of oxide cathodes by Au, J. Rothstein—693(A)
Secondary emission of oxide cathodes, J. B. Johnson—693(A)
**Thermodynamics**
Equilibria of higher order, E. F. Lype—652
Of relaxation processes, G. E. Kimball—688(A)
**Thermoelectric effects**
In germanium alloys, K. Lark-Horovitz, A. E. Middleton, E. P. Miller, W. W. Scanlon, and I. Walerstein—259(A)
In germanium, theory of, V. A. Johnson and K. Lark-Horovitz—259(A)

**Vacuum tubes** (see **Electronic tubes**)
**Vapor pressure**
Direct measurement for liquid metals, A. H. Weber and G. Plantenberg—51(A); 649

**Wave guide** (see **Electromagnetic theory**; and **Electrical circuits**)
**Wave mechanics** (see **Mechanics, quantum,** etc.)
**Wave motion**
Elastic waves in bars, J. H. McMillen—250(A)
Interaction of shock waves, R. J. Seeger, J. v. Neumann, and H. Polachek—677(A)
Propagation of waves of finite amplitude, J. M. Richardson and W. Shockley—250(A)
Reflection of a shock wave, R. J. Finkelstein—677(A)
Reflection of shock waves, theory, A. H. Taub and L. G. Smith—678(A)
Shock waves and boundary layers in supersonic gas flow, J. Winckler—678(A)
Shock waves in a tube, W. Bleakney—678(A)
Strength of a shock wave, P. C. Keenan—677(A)
Three-shock configurations, H. Polachek and R. J. Seeger—677(A)

**X-rays, absorption**
*K* absorption edge of Si, V. P. Barton and G. A. Lindsay—48(A)
**X-rays, absorption**
Structure in *K* edge of potassium, J. B. Platt—337
**X-rays, diffraction, scattering, reflection, refraction, and polarization**
Absorption in steel, J. A. Hornbeck and H. Feshbach—691(A)
Ambiguities diffraction analysis, A. L. Patterson—256(A)
**X-rays, emission** (see also **X-rays, spectra and spectroscopy,** etc.)
Auger transitions, F. R. Hirsh, Jr.—32(L)
Betatron radiation, C. O. Muehlhause and H. Friedman—691(A)
Characteristic x-rays excited by beta-particles, J. E. Edwards and M. L. Pool—49(A); 549
From radioactive Te, M. L. Pool and J. E. Edwards—49(A)
**X-rays, spectra and spectroscopy, wave-length measurements** (see also **X-rays, emission**)
Energy level widths of W, J. N. Cooper—48(A)
**X-rays, tubes, apparatus**
Fluorescent yield of calcium tungstate, E. G. Ebbighausen and J. W. Coltman—48(A)
Focal spot size in high voltage radiography, A. Sperduto—692(A)
Indexing of crystal faces of $\alpha$-quartz, F. C. Blake—49(A)
Multi-element x-ray tube, R. Pepinsky—546(A)
Photomultiplier x-ray detector, F. H. Marshall and L. P. Hunter—48(A)

**Zeeman effect**
Of Cl I, J. B. Green and J. T. Lynn—165